



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

NYPL RESEARCH LIBRARIES



3 3433 00104264 1



*CA

E 96

11111

*CA
E 96
11/11/11



Excelsior

*CA
E. 91

EXCELSIOR:

HELPS TO PROGRESS

IN

RELIGION, SCIENCE, AND LITERATURE.

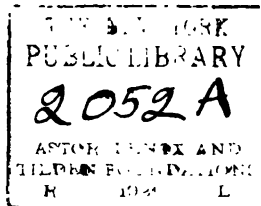
9
|

"Forgetting those things which are behind, and reaching forth unto those things which are before."—*Philippians*, iii. 13.

VOL. III.

LONDON:
JAMES NISBET AND CO. BERNERS STREET.

1855.



LONDON:
Printed by G. BARCLAY, Castle St. Leicester Sq.

CONTENTS.

| | ● Page |
|---|---------------|
| A New Year | 1 |
| On Instinct | 8 |
| Boyhood | 24 |
| The Chemical Power of the Sunbeam. Photography | 25 |
| The Giraffe | 33 |
| Hearts of Oak. Generosity | 39 |
| " " Endurance | 170 |
| My Brother's Keeper. Chapter XII..... | 45 |
| " " Chapter XIII. | 112 |
| " " Chapter XIV. | 282 |
| " " Conclusion | 305 |
| The Triumph of David | 55 |
| Dr. Kitto | 68 |
| Review of the Month (Dec. 1854) | 77 |
| Night Views from my Window. Lunar Scenery | 81, 233 |
| Life, in its Intermediate Forms. No. I. Annelida | 93 |
| " " No. II. Insecta..... | 222, 259, 355 |
| English Letter-Writers. Horace Walpole | 103 |
| " " Lady Mary Wortley Montagu | 250 |
| " " Lady Rachel Russell | 389 |
| Times of Refreshing. Chapter I. | 123 |
| " " Chapter II. | 205 |
| " " Chapter III. | 275 |
| " " Chapter IV. | 344 |
| A Sunday in Württemberg..... | 132 |
| Blucher's "Forwards!" A Ballad for the Times. By M. F. Tupper | 142 |
| Stanzas. By Mrs. Alaric Watts | 143 |
| Robins and their Songs..... | 144 |
| Ourselves. The Spinal Marrow and Nerves | 146 |
| " The Sense of Touch | 294 |
| " The Sense of Smell | 376 |
| The Wild Boar | 152 |

CONTENTS.

| | Page |
|---|---------------|
| Review of the Month (January) | 157 |
| Scenes in Hispaniola. No. I. The Morning Ride..... | 161 |
| " " No. II. The Macorning | 401 |
| Cocker's Arithmetic | 179 |
| The Stock Exchange | 185 |
| Notes on Great Pictures. Rubens' "Descent from the Cross" | 192 |
| Parables: The Guide; The Crazy Bridge; The Lighthouse..... | 201 |
| The Lion..... | 213 |
| Review of the Month (February) | 229 |
| The Tiger-Wolf | 246 |
| A Week in Württemberg | 266, 360, 434 |
| On a Great Northern Diver shot in Ireland and found to have an Indian Arrow through the Neck | 290 |
| Sunshine, Daylight, and the Rock | 292 |
| The Minstrel in the Dark | 293 |
| Review of the Month (March) | 301 |
| The Nun's Confession | 338 |
| " " L'Envoi to | 409 |
| Gazelle, the Roe of Scripture | 350 |
| British Mining. Lead | 369 |
| " " Coal | 415 |
| A New Method of demonstrating Geometrical Propositions | 382 |
| Review of the Month (April) | 387 |
| The Ormer-shell of the Channel Isles | 411 |
| Sunshine and Shadow | 421 |
| Arctic Fox | 423 |
| Fables of Pilpay..... | 429 |
| Kornthal: the Christian Colony | 434 |
| Proverbs of Solomon. I. A Wounded Spirit | 441 |
| Review of the Month (May)..... | 449 |
| Index | 451 |

ILLUSTRATIONS.

| | |
|---|-----|
| The Giraffe (<i>Camelopardalis giraffa</i>) | 33 |
| Lunar Scenery | 81 |
| The Wild Boar (<i>Sus Scrofa</i>) | 152 |
| The Lion (<i>Felis Leo</i>) | 213 |
| The Tiger-Wolf (<i>Thylacinus cynocephalus</i>) | 246 |
| The Gazelle (<i>Gazella Dorcas</i>) | 350 |
| The Arctic Fox (<i>Vulpes lagopus</i>)..... | 423 |

EXCELSIOR.

A NEW YEAR.

THERE is something very insidious in the lapse of time. When we pass the frontiers of a new country they stop us at once and demand our passport. They look to see whence the traveller has come and whither he is going ; and everything reminds us of the transition. The dress of the people is peculiar. Their language is strange. The streets and houses, the conveyances, the style of everything is new. And often the features of the landscape are foreign. Unwonted crops grow in the fields, and unfamiliar trees stand in the hedge-rows, and quaint and unaccountable creatures flit over our head or hurry across our path. And at any given moment we have only to look up, in order to remember, " This is no more my native land ; this is no longer the country in which I woke up yesterday."

But marked and conspicuous as is our progress in *space*, we recognise no such decided transitions in our progress through *time*. When we pass the frontiers of a new year, there is no one there with authority to demand our passport ; no one who forcibly arrests us, and asks, Whence comest thou ? or, Whither art thou going ? Art thou bound for the Better Country, and hast thou a safe conduct in the name of the Lord of the land ? But we just pass on—'53, '54, '55—and every year repeats, *We* demand no passport ; be sure you can show it at the journey's end, for it is certain

to be needed there. And as nothing stops us at the border, so in the new year itself there is nothing distinguishable from the year that went before. The sun rises and the sun sets. Our friends are around us all the same. We ply our business or amusements just as we did before, and all things continue as they were. And it is the same with the more signal epochs. The infant passes on to childhood, and the child to youth, and the youth to manhood, and the man to old age, and he can hardly tell when or how he crossed the boundary. On our globes and maps we have lines to mark the parallels of distance—but these lines are only on the map. Crossing the equator or the tropic, we see no score in the water, no line in the sky to mark it; and the vessel gives no lurch, no alarum sounds from the welkin, no call is emitted from the deep: and it is only the man of skill, the pilot or the captain, with his eye on the signs of heaven, who can tell that an event has happened, and that a definite portion of the voyage is completed. And so far, our life is like a voyage on the open sea, every day repeating its predecessor—the same watery plain around and the same blue dome above—each so like the other that we might fancy the charmed ship was standing still. But it is not so. The watery plain of to-day is far in advance of the plain of yesterday, and the blue dome of to-day may be very like its predecessors, but it is fashioned from quite another sky.

However, it is easy to see how insidious this process is, and how illusive might be the consequence. Imagine that in the ship were some passengers—a few young men, candidates for an important post in a distant empire. They may reasonably calculate on the voyage lasting three months or four; and, provided that before their arrival they have acquired a certain science, or learned a competent amount of a given language, they will instantly be promoted to a lucrative and honourable appointment. The first few days

are lost in the bustle of setting all to rights, in regrets, and plans, and projects. But at last one or two settle down in solid earnest, and betake themselves to the study of the all-important subject, and have not been at it long till they alight on the key which makes their after progress easy and delightful. To them the voyage is not irksome, and the end of it is full of expectation. But their comrades pass the time in idleness. They play cards, and smoke, and read romances, and invent all sorts of frolics to while away the tedium of captivity; and if a more sober companion venture to remonstrate, they exclaim, "Lots of time! Do you see any signs of land? True, we have been out of port six weeks; but it does not feel to me as if we had moved a hundred miles. Besides, man, we have first to pass the Cape, and after that we may manage very well." And thus on it goes, till one morning there is a loud huzza, and every passenger springs on deck. "Land a-head!" "What land?" "Why the land to which we all are bound." "Impossible; we have not passed the Cape." "Yes, indeed; but we did not put in there. Yonder is the coast. We shall drop anchor to-night, and must get on shore to-morrow." And then you may see how blank and pale the faces of the loiterers are. They feel that all is lost. One takes up the neglected volume, and wonders whether anything may be done in the remaining hours; but it all looks so strange and intricate, that in despair he flings it down. "To-morrow is the examination-day. To-morrow is the day of trial. It is no use now. I have played the fool, and lost my opportunity:" whilst their wiser friends lift up their heads with joy, because their promotion draweth nigh. With no trepidation, except so much as every thoughtful spirit feels when a solemn event is near, without foreboding and without levity, they look forth to the nearer towers and brightening minarets of that famed city, which

has been the goal of many wishes, and the home of many a dream. And as they calmly get ready for the hour of landing, the only sorrow that they feel is for their heedless companions, who have lost the returnless opportunity to make their calling and election sure.

So, dear reader, in this barque of earthly existence we are floating onwards to the great eternity; and there is a certain lesson given us to learn in order to secure a welcome and a high promotion whenever we arrive. But from the subtle illusion already indicated, few address themselves to that great study betimes. Few so "number their days as to apply their hearts to heavenly wisdom." Each day looks so like the other,—yesterday as life-like as the day before, and the present day as hale and hopeful as either, that it becomes quite natural to say, "To-morrow will be as this day, and much more abundant." And so the golden moments glide away. One is constantly adjusting his berth, and finds new employment every day in making it more comfortable or more complete; and he will perhaps be so engaged the night when the anchor drops and the sails are furled. And many more amuse themselves. They take up the volume which contains the grand lesson, and look a few minutes at it, and put it past, and skip away to some favourite diversion; whilst they know full well, or fear too sadly, that they have not reached the main secret yet.

Our great business is to get acquainted with God, and so to become fit for His presence in the realms of light and purity. His friendly disposition He has announced in the Gospel of His grace; and when that announcement has subdued us into love and obedience, we are new creatures. As soon as we can say, "I know whom I have believed, and I am persuaded that He is able to keep that which I have committed unto Him," a dreadful burden will be removed

from our conscience, and it will be no longer with an anxious foreboding that we shall contemplate the end of the voyage. The announcement, that we this day cross another parallel, need cause us no perturbation; and, waking from this night's slumber, should we hear the hurrying footsteps and unfamiliar voices which bespeak the vessel come to port, we may calmly arise and make ready, for our Friend is there already, and has prepared a place for us, and we shall find it all home-like and congenial.

When the late Treasurer of the London Missionary Society, Mr. Hardcastle, found himself dying, he said, "My last act of faith I wish to be, to take the blood of Jesus as the high-priest did when he entered behind the veil, and when I have passed the veil I would appear with it before the Throne." And in making the transit from one year to another, this is our most appropriate exercise. We see much sin in the retrospect,—we see many a broken purpose, many a misspent hour, many a rash and unadvised word; we see much pride and anger, and worldliness and unbelief; we see in the year now ended many offences against our neighbour and our God. Let us carry them to the Fountain opened for sin. There is nothing for us but the Great Atonement. With that atonement let us, like believing Israel, end and begin anew. To its sin-cancelling expiation let us consign the guilty past; and, bearing its precious blood, let us pass within the veil of a solemn and eventful future.

For that future, too, this is the time to form and to commence carrying out better resolutions. There may be good plans which the reader has long entertained, but which, from the want of a decisive beginning, are likely to result in nothing. You have sometimes thought that it would be very profitable to read the Bible right through. You have long been unhappy because there is no worship of God in your family.

You have often felt that it would be right to conduct a class in the Sunday-school, or to visit a few of your poorer neighbours. There is some bad habit which you are always intending to leave off,—some good one which you are always going to begin. Now is the day. Remembering on whose help and blessing it is that you depend for the ability to carry through the best purposes, make this “beginning of days” the beginning of your better doing.

There is, doubtless, some danger in the keeping of a diary ; but there is one form of it which is surely exempt from the usual risks of spiritual pride and morbid self-anatomy. And on the same principle on which frugal householders keep a memorandum of how they spend their money, it might be well for all of us to keep a written record of the way in which we spend a talent more precious still. It would be a constant reminder of our good resolutions, and the blanks in the register, by rebuking our indolence, would stir us up to fresh exertions in redeeming the time. And it would teach us the value of a commodity which all of us prize too lightly. Nothing is more wonderful than the infatuation with which we waste it. Were you following a man along the streets, and did you see him scattering coin in every direction,—tossing half-pence to all the passengers, and chucking sovereigns into the Thames or the kennel, you would say, “The man is mad :” and even if an acquaintance told you, “He is very rich,” you would answer, “He may be as rich as Croesus, but at this rate he will soon be a beggar.” But here is a man quite as reckless of the golden hours and silver minutes. Not that he spends them in the tavern ; not that he spends them in drink and dissipation ; not that he spends them in heaping up treasure in hell. But he spends them on no noble pursuit ; he converts them into no enduring equivalent. Every evening he has his modicum of leisure ; the hours

which, by continuous thrift, might make him a scholar, or an adept in the sciences, or which might go far to build up his intellectual and spiritual manhood, he wastes on trifles and tomfoolery. Young though he is, so fast is he squandering his heritage of existence, you foresee that he must die in dreariest poverty. But just as a spendthrift has sometimes been startled into a miser by realising the worth of money, so the life-waster has occasionally been cured of his reckless profusion by seeing the splendid results achieved through time's good husbandry. And just as the miser loves to count his coin, and as his accurate reckoning tends to make him still more frugal and more wealthy, so there is wisdom in "counting our days," and in preserving that record of their bestowment which, by rendering time a palpable commodity, at the same time enhances its value. That time which we call our own is an awful stewardship; and it is surely worth while, for our own admonition, to take some note of what is so exactly recorded elsewhere.

"Like summer-bees that hover
Around the idle flowers;
They gather every act and thought,
These viewless angel hours.

"The poison or the nectar,
The heart's deep flower-cups yield;
A sample still they gather swift,
And leave us in the field.

"And as we spend each minute,
Which God to us hath given,
The deeds are known before His Throne,
The tale is told in heaven.

"These bee-like hours we see not,
Nor hear their noiseless wings;
We only feel too oft when flown,
That they have left their stings."*

J. H.

* Cranch.

ON INSTINCT.

AMONG all the subjects connected with Natural History, there is not one more interesting than the subject of Animal Instinct, forming, as it does, a link, and presenting a point of contact, between Zoology and that branch of Philosophy which has relation to the human mind. And yet, if we were to judge of the interest it excites, from the degree of information brought to bear upon the subject in existing books, it might be supposed to be very faint; at least, not strong enough to lead to any attempt at a philosophic or systematic view of it. We have, indeed, in many books interesting descriptions of different instincts, curiously illustrated by well-authenticated facts. We have much of important and interesting characteristics of instinct; but a Treatise on Instinct is still a desideratum. It is, however, far more easy to point out a want than to supply it; and, therefore, my hope in presenting some thoughts on the subject, is rather to call attention to the want than to meet it; my object being to propose questions for consideration, without presuming to think I can answer them satisfactorily, either to others or to myself. But in the pursuit of knowledge, the next best thing to satisfaction is *unsatisfaction*—the learning to be dissatisfied with the extent of knowledge attained from perceiving how much there is to be known, to be studied, and to be enquired into.

And first,—What is meant by Instinct? It is in general rather implied and supposed, than distinctly laid down, that a being is acting instinctively when impelled blindly towards some end which the agent does not aim at or perceive; and on the other hand, that it is acting rationally when acting with a view to, and for the sake of, some end which it *does* perceive. But in the ordinary language even of Naturalists, and even when they are describing and recounting instances

of instincts, and asserting, as many are accustomed to do, that Brutes are actuated by Instinct, and Man by Reason, we often meet with much that has the appearance, at least, of being very inconsistent with such a view.

When I speak of Animal-Instinct, it should be remembered that I include Man ; for, although it is a fact frequently forgotten by many, yet it is a fact, that Man is an animal. Man possesses instinct, though in a lower degree than most other animals ; his inferiority being compensated by his superiority in other respects. And, again, as Man possesses instinct in a lower degree than the brutes, so, in a lower degree than Man, brutes—at least the higher brutes—possess reason. As some things felt and done by Man are allowed to be instinctive,—hunger and thirst, for instance, are evidently instincts, not less in the adult than in the newborn babe—so, many things done by brutes, would be, if done by man, regarded as resulting from the exercise of reason, being not only the same acts, but done to all appearance from the same impulse as the rational acts of man : such things, for instance, as brutes *learn* to do, either by their own unaided experience, or as taught by man. *Docility* is evidently characteristic of reason. To talk of an elephant, a horse, or a dog, doing by instinct such things as it has been *taught*, would be as absurd as to talk of a child's learning to read and write by instinct.

But, moreover, brutes are, in many instances, capable of learning even what they have not been taught by man. They have been found able to combine, more or less, the means of accomplishing a certain end, from having learned by experience that such and such means so applied would conduce to it. The higher animals, of course, show more of reason than the lower. There are many instances of its existence in domestic animals.

The dog is regarded as the animal most completely man's

companion ; and I will mention one, out of many specimens of the kind of reason to which I refer, as exhibited in a dog. This dog, being left on the bank of a river by his master, who had gone up the river in a boat, attempted to join him. He plunged into the water, but not making allowance for the strength of the stream, which carried him considerably below the boat, he could not beat up against it. He landed, and made allowance for the current of the river, by leaping in at a place higher up. The combined action of the stream, and his swimming, carried him in an oblique direction, and he thus reached the boat. Having made the trial, and failed, he apparently judged, from the failure of the first attempt, that his course was to go up the stream, make allowance for its strength, and thus gain the boat.

There is another instance of this nature which did come under my own observation, and is more worthy of being recorded, because the actor was a cat,—a species of animal which is considered, generally, very inferior in sagacity to a dog. This cat lived many years in my mother's family, and its feats of sagacity were witnessed by her, my sisters, and myself. It was known, not merely once or twice, but habitually, to ring the parlour bell whenever it wished the door to be opened. Some alarm was excited on the first occasion that it turned bell-ringer. The family had retired to rest, and in the middle of the night the parlour bell was rung violently : the sleepers were startled from their repose, and proceeded down-stairs, with pokers and tongs, to interrupt, as they thought, the predatory movement of some burglar ; but they were agreeably surprised to discover that the bell had been rung by Pussy, who frequently repeated the act whenever she wanted to get out of the parlour.

These are two clear cases of acts done by a cat and dog, which, if done by a man, would be called Reason. Every one would admit that the actions were rational—not, to be

sure, proceeding from a very high exertion of intellect; but the dog, at least, rationally jumped into the stream at a distance higher up from the boat, into which he wished to get, because he found that the stream would thus carry him to it, instead of from it; and the cat pulled the parlour bell, because she had observed that when it was rung by the family, the servant opened the door. Without entering into the inquiry, What is called Reason, or what is denominated Instinct, I would only say, that it is quite clear that if such acts were done by man, they would be regarded as an exercise of reason; and I do not know why, when performed by brutes, evidently by a similar mental process, as far as can be judged, they should not bear the same name. To speak of a cat's having an instinct to pull a bell, when desirous of going out at the door, or of an elephant's lifting up a cannon, or beating down a wall, at his driver's command, by instinct, would be to use words at random.

On the other hand, hunger and thirst are as instinctive in man as in brutes. An invalid, indeed, when taking food without appetite, does not act upon instinct; he acts upon reason, which tells him that unless he eat, his strength would not support the disease under which he labours; but the man who eats when he is hungry, and drinks when he is thirsty, acts as truly from instinct as the new-born babe when it sucks.

It appears, then, that we can neither deny reason, universally and altogether, to brutes, nor instinct to man; but that each possesses a share of both, though in very different proportions. And now a question naturally arises—a question which we propose, but do not presume positively to decide — “What is the difference between man and the higher brutes?” We have already decided, in reference to *one* point, what the difference does *not* consist in. It is not that brutes are wholly destitute of everything that, in man, we

call reason. Instances to the contrary, similar to what have been above mentioned, might be produced to a great extent. But this would be superfluous; because, as has been said, the *docility* of many brutes is familiar to all; and if any one could seriously speak of teaching anything to a being wholly devoid of *reason*, he would evidently be using the word in some sense quite different from that in which it is ordinarily employed.

And yet, the difference between man and brute, in respect of intelligence, appears plainly to be not a difference in mere *degree*, but in *kind*. An intelligent brute is not like a stupid man. The intelligence and sagacity shown by the elephant, monkey, and dog, are something very different from the lowest and most stupid of human beings. It is a difference in kind, not merely in degree.

It strikes me that in all the most remarkable instances in which brutes display reason, all the intellectual operation seems to consist in the *adaptation of means to an end*. The dog who swam from a higher part of the river to reach the boat; the cat who rang the bell to call the servant; the elephant, of whom we have read, that was instructed by his keeper off hand, to raise himself from a tank into which he had fallen, by means of faggots thrown into him by the keeper, on which the elephant raised himself from the pit, and from which all the windlasses and cranes in the Indian empire could not have extricated him; the monkey in the Zoological Gardens, who used to possess himself of a nut placed beyond the reach of his paw, by doubling a straw, and casting this round it, by which means he was enabled to draw it towards him: these, and many other similar instances of sagacity, appear to consist in the adaptation of means to an end.

But the great difference between man and the higher brutes, appears to me to consist in the power of using *SIGNS*

—arbitrary signs—and *employing language as an instrument of thought*. We are accustomed to speak of language as useful to man, to *communicate* his thoughts. I consider this as only *one* of the uses of language. That use of language which, though commonly overlooked, is the most characteristic of man, is as an instrument of thought. Man is not the only animal that can make use of language to express what is passing within his mind, and that can understand, more or less, what is so expressed by another. Some brutes can be taught to utter, and many others to understand, more or less imperfectly, sounds expressive of certain emotions. Every one knows that the dog understands the general drift of expressions used; and parrots can be taught not only to pronounce words, but to pronounce them with some consciousness of the general meaning of what they utter. We commonly speak, indeed, of “Saying so-and-so by rote, as a parrot;” but it is by no means true that they are quite unconscious of the meaning of the sounds. Parrots do not utter words at random, for they call for food; when displeased, scold; and use expressions in reference to particular persons which they have heard applied to them. They evidently have some notion of the general drift of many expressions which they use. Almost every animal which is capable of being tamed, can, in some degree, use language as an indication of what passes within. But no animal appears to be capable of another very important use of language, which does characterise Man—namely, the employment of “common terms,” (“general terms”) formed by abstraction, as *instruments of thought*; by which alone a *train of reasoning* may be carried on.

And accordingly, a deaf-mute, before he has been taught a language,—either the finger-language, or reading,—cannot carry on a train of reasoning any more than a brute. He differs, indeed, from a brute in possessing the mental

capability of employing language ; but he can no more *make use* of that capability till he is in possession of some *system* of *arbitrary general signs*, than a person born blind from cataract can make use of his capacity of seeing till the cataract is removed. Hence, it will be found by any one who will question a deaf-mute, who has been taught language after growing up, that no such thing as a train of reasoning had ever passed through his mind, before he was taught. There is a remarkable circumstance in reference to this point, mentioned in the interesting accounts of the now well-known case of the American girl, Laura Bridgeman, who having been from birth, not only deaf and dumb, but also blind, was taught the finger-language, and to read what is printed in raised characters, and also to write. When she is alone, her *fingers are generally observed to be moving*, though the signs are so slight and imperfect that others cannot make out what she is thinking of. But if they inquire of her, she will tell them. It seems that having once learnt the use of signs, she feels the necessity of them as an instrument of thought, when thinking of anything beyond mere individual objects of sense. And, doubtless, every one else does the same.

This apparent incapability of employing abstraction is also observable in the fact, that even the most intelligent brutes seem unable to form any distinct notion of *number* ; to do which evidently depends on abstraction. For, in order to *count* any object, you must withdraw your thoughts from all *differences* between them, and regard them simply as *units*. And accordingly, the savage tribes (who are less removed than we are from the brutes) are remarked for a great deficiency in their notions of *number*. Few of them can count beyond ten, or twenty ; and some of the rudest savages have no words to express any number beyond five.

It appears, then, that there are certain kinds of intel-

lectual power—of what, in Man, at least, is always called Reason—common to a certain extent, to Man with the higher brutes. And again, that there are certain powers wholly confined to Man—especially all those concerned in what is properly called Reasoning—all employment of language as an instrument of thought; and it appears that instinct, again, is to a certain extent, common to Man with brutes, though far less in amount, and less perfect in Man; and more and more developed in other animals, the lower we descend in the scale of creation. Insects far surpass, in this respect, the more intelligent brutes. The architecture of many of them is far more complicated and curious than that of the bird or the beaver;—and they not only construct receptacles for their young, but, in many instances—that of the bee among others—store up in them a supply of food of a totally different kind from that they subsist on themselves.

But of all these wonderful provisions of instinct in the insect-world, there is not, perhaps, a more remarkable phenomenon than one which has often occurred to my mind, as presenting a curious analogy with the condition of some of our race, in regard to the preparation for a future life. Most persons know that every *butterfly* (the Greek for which, it is remarkable, is the same that signifies also the soul—*Psyche*) comes from a grub or caterpillar, in the language of naturalists called a *larva*. The last name (which signifies literally a mask) was introduced by Linnaeus, because the caterpillar is a kind of outward covering, or disguise of the future butterfly within. For, it has been ascertained by curious microscopic examination, that a distinct butterfly, only undeveloped and not full grown, is contained within the body of the caterpillar; that this latter has its own organs of digestion, respiration, &c., suitable to its larva-life, quite distinct from, and independent of, the future butterfly which it encloses. When the proper period arrives, and the

life of the insect, in this its first stage, is to close, it becomes what is called a pupa, enclosed in a chrysalis or cocoon (often composed of silk, as is that of the silk-worm which supplies us that important article), and lies torpid for a time within this natural coffin, from which it issues, at the proper period, as a perfect butterfly.

But sometimes this process is marred. There is a numerous tribe of insects, well known to naturalists, called Ichneumon-flies, which in their larva state are *parasitical*; that is, inhabit, and feed on, other larvæ. The Ichneumon-fly being provided with a long sharp sting, which is in fact an *ovipositor* (egg-layer), pierces with this the body of a caterpillar in several places, and deposits her eggs, which are there hatched, and feed, as grubs (larvæ) on the inward part of their victims. A most wonderful circumstance connected with this process is, that a caterpillar which has been thus attacked goes on feeding, and apparently thriving quite as well during the whole of its larva-life, as those that have escaped. For, by a wonderful provision of instinct, the Ichneumon-grubs within do not injure any of the organs of the larva, but feed only on the future butterfly inclosed within it. And consequently, it is hardly possible to distinguish a caterpillar which has these enemies within it from those that are untouched. But when the period arrives for the close of the larva-life, the difference appears. You may often observe the common cabbage caterpillars retiring, to undergo their change into some sheltered spot—such as the walls of a summer-house; and some of them—those that have escaped the parasites—assuming the pupa-state, from which they emerge butterflies. But as for the others, the ichneumon-grubs at this period issue forth, and spin their little cocoons of bright yellow silk (about the size and shape of grains of wheat), from which they are to issue as flies. Of the unfortunate caterpillar that has been preyed

upon, nothing remains but an empty skin. The hidden butterfly has been secretly consumed. Now is there not something analogous to this wonderful phenomenon in the condition of some of our race? May not a man have a kind of secret enemy within his own bosom destroying his soul,—*Psyche*,—though without interfering with his *well-being during the present stage* of his existence, and whose presence may never be detected till the time arrives when the *last great change* should take place? Every man should reflect whether this may not be his case, remembering that it is in his power now, through the help that is promised, to detect and destroy these secret but deadly enemies within him!

There are many cases in which it cannot be ascertained towards what the immediate impulses of animals tend. We do not know through the medium of what organs birds are induced to put food into the mouths of their young. We see a pair of birds searching all day long for food; and, in many instances, the food they seek is such as they do not feed on themselves—for example, granivorous birds hunt after caterpillars for their young: in other cases they seek for food which their own appetite incites them to eat; but they treasure it for their young, and are impelled by an instinctive appetite to put it into its mouth when opened. And this instinct is not peculiar to birds. The mammalia partake of it; for we find wolves, dogs, and other carnivorous animals bringing home meat, and leaving it before their young ones. If a bitch or wolf has pups, and cannot bring food to them otherwise than by first swallowing it, she swallows it, and then disgorges it; for the animal has the power of evacuating its stomach at pleasure. Pigeons invariably swallow their food before they give it to their young. Take the case of migratory birds—even those which have been caged: when a particular season arrives, they desire to fly in a certain direction; but what leads them in

that direction cannot be understood. That direction is pointed out to them by God; but how pointed out is only known to Him.

The *combination* of physical laws, with *instincts adapted* to them, is one of the most interesting and important points dwelt on by the many able authors who have treated of Natural Theology. One instance out of many, of this principle, may be taken as a sample—that of the instinct of suction, as connected with the whole process of rearing young animals. The calf sucks, and its mother equally desires to be disburthened of its milk. Thus, there are two instincts tending the same way. Moreover, the calf has an appetite for grass also; it takes hold of the grass, chews and swallows it; but it does not bite, but sucks the teat. But it is also necessary that there should be a physical adaptation of the atmosphere to the instinct of the animal. It is the pressure of the atmosphere upon the part, and the withdrawal of that pressure within the young animal's mouth, which forces out the milk. Here is an adaptation of instinct to the physical constitution of the atmosphere. Yet, again, all this would be insufficient without the addition of that *storgé*, or instinctive parental affection which leads the dam carefully to watch and defend its young. The most timid animals are ready to risk their lives, and undergo any hardships, to protect their young, which is a feeling quite distinct from the gratification felt by the dam from her offspring drawing her milk. Here, then, are several instincts, and the adaptation of the atmosphere to one of those instincts, all combining towards the preservation of the species; which form, in conjunction, as clear an indication of design as can be conceived. It is hardly possible to conceive any plainer mark of design, unless a person were beforehand to say, that he intended to do a certain thing. Yet this is not all; for the secretion of milk is not

common to both sexes, and at all ages and all times. Here is the secretion of milk at a particular time, just corresponding with the need for it. If we found sickles produced at harvest, fires lighted when the weather is cold, and sails spread when favourable winds blow, we should see clearly that these things were designed to effect a certain end or object. Now, in the case of the mother and the young, there is a secretion of milk at a particular period, and in an animal of a distinct sex—the one which has given birth to the young. Yet the perpetuation of the species might take place, if the milk had been provided so as to be constant in all ages and sexes. But what we do see is, means provided for an end, and just commensurate to that end.

And if the study of instincts, strictly so called—those wholly unconnected with anything rational in the agent—brings to light such countless traces of divinely-wise contrivance, a no less admirable monument of the Creator's stupendous wisdom is to be found in the provision He has made for the *progress of Society* in the operation in human agents of impulses which, while tending immediately to some certain end contemplated by the agent, and therefore rational, may yet, as far as respects another and quite different end he did *not* contemplate, be considered as, in some sort, instinctive. For instance, a man may be deliberately taking means to provide food for the gratification of his hunger, without having any other object in view, while he is probably at the same time, and by the same act, promoting another object,—the preservation of his life, health, and strength; which object, by supposition, he was not thinking about. His acts, therefore, are in reference to the preservation of life,—analogous, at least, to those of instinct; though, in reference to the object he was contemplating—the gratification of hunger—they are the result of deliberate calculation.

There are many portions of man's conduct, especially

as a member of society, to which this kind of description will apply; and these are often attributed to human forethought and design, while they might, with greater truth, be referred to a kind of instinct, or something analogous to it, which leads him, while doing one thing by chance for his own benefit, to do another undesignedly, under the guidance of Providence, for the service of the community.

But there is nothing in which this providential guidance is more liable to be overlooked—no case in which we are more apt to mistake for the wisdom of man what is, in truth, the wisdom of God.

In the results of instinct in brutes, we are sure not only that although the animals themselves are, in some sort, agents, they could not originally have designed the effects they produce, but that even afterwards they have no notion of the combination by which these are brought about. But when *human* conduct tends to some desirable end, and the agents are competent to perceive that the end *is* desirable, and the means well adapted to it, they are apt to forget that, in the great majority of instances, those means were not devised, nor those ends proposed, by the persons themselves who are thus employed. The workman, for instance, who is employed in casting printing-types, is usually thinking only of producing a commodity by the sale of which he may support himself; *with reference to this object* he is acting, not from any impulse that is at all of the character of instinct, but from a rational and deliberate choice: but he is also in the very same act contributing most powerfully to the diffusion of knowledge, about which, perhaps, he has no anxiety or thought; in *reference to this latter object*, therefore, his procedure corresponds to those operations of various animals which we attribute to instinct; since *they*, doubtless, derive some immediate gratification from what they are doing. Indeed, in all departments connected with the acquisition

and communication of knowledge, a similar procedure may be traced. The greater part of it is the gift, not of human, but of divine benevolence, which has implanted in man a thirst after knowledge for its own sake, accompanied with a sort of instinctive desire, founded probably on sympathy, of communicating it to others as an ultimate end. This, and also the love of display, are no doubt inferior motives, and will be superseded by a higher principle, in proportion as the individual advances in moral excellence. These motives constitute, as it were, a kind of scaffolding, which should be taken down by little and little, as the perfect building advances, but which is of indispensable use till that is completed.

It is to be feared, indeed, that Society would fare but ill if none did service to the public, except in proportion as they possessed the rare moral and intellectual endowment of an enlightened public spirit. For such a spirit, whether in the form of patriotism, or in that of philanthropy, implies not merely *benevolent feelings* stronger than, in fact, we commonly meet with, but also powers of *abstraction* beyond what the mass of mankind *can* possess. As it is, many of the most important objects are accomplished by unconscious co-operation; and that, with a certainty, completeness, and regularity, which probably the most diligent benevolence under the guidance of the greatest human wisdom, could never have attained.

For instance, let any one propose to himself the problem of supplying with daily provisions the inhabitants of such a city as London—that “province covered with houses.” Let any one consider this problem in all its bearings, reflecting on the enormous and fluctuating number of persons to be fed,—the immense quantity of the provisions to be furnished, and the variety of the supply (not, as for an army or garrison, comparatively uniform)—the importance of a

convenient distribution of them, and the necessity of husbanding them discreetly, lest a deficient supply, even for a single day, should produce distress, or a redundancy produce, from the perishable nature of many of them, a corresponding waste ; and then let him reflect on the anxious toil which such a task would impose on a Board of the most experienced and intelligent commissaries, who, after all, would be able to discharge their office but very inadequately. Yet this object is accomplished far better than it could be by any effort of human wisdom, through the agency of men who think each of nothing beyond his own immediate interest—who are merely occupied in gaining a fair livelihood ; and with this end in view, without any comprehensive wisdom, or any need of it, they co-operate, unknowingly, in conducting a system which, we may safely say, no human wisdom directed to that end could have conducted so well—the system by which this enormous population is fed from day to day—and combine unconsciously to employ the wisest means for effecting an object, the vastness of which it would bewilder them even to contemplate.

I have said, “ no *human* wisdom ;” for *wisdom* there surely is in this adaptation of the means to the result actually produced. And admirable as are the marks of contrivance and design in the anatomical structure of the human body, and in the instincts of the brute creation, I know not whether it does not even still more excite our admiration of the beneficent wisdom of Providence, to contemplate, not corporeal particles, but rational, free agents, co-operating in systems no less manifestly indicating design, yet no design of theirs ; and though acted on, not by gravitation and impulse, like inert matter, but by motives addressed to the will, yet advancing as regularly, and as effectually, the accomplishment of an object they never contemplated, as if they were merely the passive wheels of a machine. If one

may, without presumption, speak of a more or less in reference to the works of Infinite Wisdom, I would say, that the branch of Natural Theology with which we are now concerned, presents to the reflective mind views even more striking than any other. The heavens do indeed "declare the glory of God;" and the human body is "fearfully and wonderfully made;" but Man, considered not merely as an organised being, but as a rational agent, and as a member of society, is perhaps the most wonderfully contrived, and to us the most interesting, specimen of Divine Wisdom that we have any knowledge of. Πολλὰ τὰ δειρά, καὶ οὐδὲν ἀσθενέστερον δεικνυμένον πάλιν.

One more question I would point attention to, as well worthy of inquiry—that relating to the *implanting* and *modification* of Instinct, in animals, and to what extent it is the consequence of the education received by many generations of their predecessors. The most widely diffused of all implanted and modified instincts, is that of wildness or tameness. Whether the original instinct of brutes was to be afraid of man, or familiar with him, I will not undertake to say. My own belief is, that it is the *fear* of man that is the implanted instinct. But at any rate, it is plain that *either* the one or the other—wildness *or* tameness—must be an implanted, and not an original instinct. All voyagers agree, that when they have gone into a country, which had not apparently been visited by man, neither bird nor beast exhibited fear. The birds perched familiarly upon their guns, or stood still to be knocked on the head. After the country had been for some time frequented, not only individual animals become afraid of man, but their offspring inherit that fear by instinct. The domesticated young of the cow, and the young of the wild cattle of the same species, furnish illustrations of this fact. I have seen an account of an experiment tried with respect to these latter.

In this instance, a very young calf of one of the breed of wild cattle still remaining in some of the forests in England, on seeing a man approach, lay crouching close, and preserving the most perfect stillness, apparently endeavoured to escape notice. On being discovered, it immediately put itself in an attitude of defence, commenced bellowing and butting at the intruder, with such violence that it fell forward upon its knees; its limbs, from its tender age, being yet scarcely able to support it. It rose and repeated the attack again and again, till by its bellowing, the whole herd came galloping up to its rescue. We all know how different this is from the action of a young calf of the domestic breed.

R. W.

BOYHOOD.

FRESH as an April morn—as prone to alloy
Laughter's gay sunshine with the gloom of tears,—
Voiced like a bird that in mid-heaven careers,
Pouring o'er earth high notes of love and joy,—
Rapid like it and restless, graceful, coy,—
Embarrassed still by childhood's lingering fears,
Yet full of courage, proud of heart—the boy
Shrinks from the breath of shame, and midst his peers,
Kindleth at voice of praise. 'Tis come—the hour
Sacred to culture;—now unto his soul
Exultingly expanding, as a flower
Opening its petals, is a wise control
As pruning to the plant,—as genial shower
Instruction's voice instilling truth with power.

M. B.

THE CHEMICAL POWER OF THE SUNBEAM.

PHOTOGRAPHY.

IF we carefully examine the history of scientific discovery, it will be apparent that the progress of knowledge is regulated by a constant law. The time appears to be fixed when any new truth shall be born unto man. These laws are far beyond the reach of human intellect; but we are permitted to see that the Eternal One, who regulated the tides of the material ocean, has, in His infinite wisdom, fixed the extent of oscillation—the height and the depth of each mental wave, and commanded the great spiritual tide-wave of knowledge to advance in obedience to an undeviating law.

From the earliest periods of history—since man clothed himself in dyed garments—it must have been observed that some colours were darkened, whilst others were bleached, by the sun's rays. To the philosophy of this, his mental eye was obscured—the fact was constantly occurring (and a thousand facts are still for ever presenting themselves to us, unnoticed or uncared for), and man did not perceive the important bearing of the phenomenon.

Eventually, the alchemists, possessed with the idea that gold differed from silver in nothing but that it contained more of the sun's sulphur, were induced to present various compounds of silver to the sunshine, with the hope of obtaining this "*interpenetration of the sulphureous principle of light*," which was to change the baser silver to the royal gold. Thus they discovered the remarkable change already described (vol. ii. p. 402) which takes place in the sunshine on one of the salts of silver.

Eventually an Englishman, Mr. Thomas Wedgwood—the son of him who so greatly improved our porcelain manufacture—conceived it quite possible, since different-coloured media were not equally transparent to the radiant chemical power, to copy the paintings on the windows of our old churches by covering white paper or leather with the nitrate or the chloride of silver. He succeeded in his experiments, and, with the assistance of Sir Humphry Davy, extended his plan so far as to secure copies of images by the solar microscope, thus becoming the discoverer of the beautiful art of PHOTOGRAPHY. The pictures produced by Mr. Wedgwood wanted permanence. They could only be preserved in the dark. Viewed by daylight they soon became uniformly black. A few years after this a French gentleman, M. Niepce, was induced to take up the inquiry, and he made the remarkable discovery, that the solar rays altered the character of all kinds of resinous substances. He therefore spread upon plates of glass and metal a thin coating of some varnish, and placing it in the camera-obscura, allowed the beautiful images of Baptista Porta's instrument to fall upon the plate.*

These images, being the result of radiations from external objects, have relatively the amount of luminous and chemical power determined by the colours of their surfaces, and the quantity of illumination to which they are exposed. It was found, after exposure in this way, that some portions of the resinous surface were more soluble than others. The plates were consequently placed in some solvent, and thus was gradually developed "the clouded imagery" of the picture impressed upon the plate. Many of the pictures thus produced—called by their discoverer HELIOGRAPHS †—are still

* The Camera-obscura is now too well known to require a description. It was the discovery of an Italian philosopher, Baptista Porta, in the sixteenth century.

† Meaning *Sun-drawing*—a name far more happily chosen than

to be found in this country, M. Niepce, being involved in the revolutionary troubles of France, having sought safety and repose at Kew. Niepce eventually returned to Paris, and then became acquainted with Daguerre, the dioramic painter. They were both engaged in the same line of inquiry, and it was agreed that they should continue their investigations together. It is not quite easy to trace the progress made by Niepce and Daguerre, as it was not until after the death of Niepce that Daguerre announced the discovery of the process which bears his name.

During this period Mr. Henry Fox Talbot was quietly working in the same direction, and he so far improved upon the process of Wedgwood, as to give permanence to the sun-drawn pictures. Since the publication of these processes, photography has made rapid advances.

A few of the more important processes must now be described. It is difficult, within the limits allowed, to make a selection from, or to enter into the details of, the various methods by which photographs can be obtained; the most satisfactory course will be to state those general principles by which the resulting photographic phenomena may be best understood.

If silver is dissolved in nitric acid we obtain a salt—nitrate of silver. When this salt is dissolved in perfectly pure distilled water, it may be exposed to sunshine for any period without undergoing change; but add thereto the smallest portion of organic matter, and it is quickly decomposed, the silver being precipitated as a black powder. In paper we have the required organic principle, and if we wash a sheet with the solution of nitrate of silver, and expose it with any body superposed—say a fern-leaf,—all

PHOTOGRAPHY—or *Light-drawing*, modern science having shown that the chemical changes are not due to the light-producing power of the sunbeam, but to an associated *dark* principle called ACTINISM.

the parts which are exposed will blacken, those screened will remain white, and thus there will be produced what is called a *negative* image. Chloride of silver, obtained by washing the paper, first with a weak solution of common salt and then with nitrate of silver, is a far more sensitive photographic agent, and is now commonly employed.

The Calotype process of Mr. Fox Talbot consists in washing paper, first with *iodide of potassium*, and then with nitrate of silver, by which process is obtained an *iodide of silver*. The paper should contain nothing but this iodide ; therefore all soluble salts are removed by soaking in water. This pale primrose-colour paper, which is not sensitive to light, is washed with a peculiar organic salt called gallic acid ; and, to increase the instability of the preparation, a little nitrate of silver is added to it, producing what the inventor calls a *gallo-nitrate of silver*. Here we have a preparation already quick with chemical energy ; this is applied to the iodized paper, and the chemical power of the sun, as radiated from external objects, instantly produces a change—that change bearing an exact relation to the intensity of the rays falling upon each portion of the light-created picture.

Presently a picture becomes visible, and it is increased in intensity by washing it, in the dark, with a fresh portion of the gallic acid solution. The picture thus obtained is fixed by washing it with a salt, which dissolves the iodide or the chloride of silver, which has not undergone change—the *hyposulphite of soda*—and subsequently soaking in clean water.

The Daguerreotype consists in producing an iodide of silver upon the surface of a polished silver-plate, and receiving the camera image upon this prepared surface. In both of these processes a decomposition of the iodide of silver results ; but in Daguerre's process, the image is deve-

loped by exposing the plate on which it has been impressed to the vapour of mercury.

Mercury combines with metallic silver, but not with the iodide ; thus it is deposited over every portion of the plate on which the solar radiations have acted—the thickness of the deposit bearing a strict relation to the intensity of chemical effect produced. This picture is also fixed by the use of the hyposulphite of soda ; as, indeed, are nearly all varieties of photographic pictures.

By modifications, which cannot be here detailed, these processes have been greatly increased in sensibility ; the result which formerly required twenty minutes being now obtained in as many seconds.

A process more sensitive than either of those named has extended photography in a most remarkable manner—this is the COLLODION process. Collodion is gun-cotton dissolved in ether ; to this is added some iodide of potassium dissolved in spirits of wine. This iodized collodion is poured over a sheet of glass—the ether evaporating leaves a beautiful film on the surface, which, upon the glass being dipped into a solution of nitrate of silver, becomes exquisitely sensitive. This prepared tablet being placed in the camera receives an image almost instantaneously, which is brought out in full vigour by pouring over it a solution of the proto-sulphate of iron or of pyro-gallic acid.

The exquisite perfection of the collodion pictures, dependent upon the rapidity with which the images are impressed, is mainly due to the peculiar conditions of this singular preparation. By a preparation in many respects analogous to the collodion, a degree of sensibility far exceeding anything which the most sanguine photographer dreamed of in his ardent moments has been obtained. A plate prepared with albumen, iodide of iron, and alcohol, and acetic acid, was placed in a dark room of the Royal Institution in a

camera obscura ; opposite to it, at the proper focal distance, was a wheel, which was made to revolve many hundred times in a second, and this wheel carried a printed bill upon its face. This rapidly revolving placard was illuminated for a moment by a flash from a Leyden jar. When the prepared plate was examined by means of a developing agent, it was found, that notwithstanding the rapidity with which the image moved over the lens and the transient nature of the light—a picture of the printed bill was clearly formed, with the letters perfect. This was an experiment of Mr. Fox Talbot's, and is perhaps the most remarkable of the many examples of natural magic with which photography has brought us acquainted.

It has long been a problem, the solution of which has been anxiously looked for, whether we might hope to obtain pictures in all the beauty of natural colour. This has not yet been quite successfully accomplished ; but the approaches towards it are so favourable that we may hope, in a few years, to find our photographic pictures coloured by the agent which now draws them.

That the delicate and fading images of the camera obscura should be permanently secured upon plates of metal and glass, and on paper, was, at one time, beyond the dreams of science. We rejoice in the reality, and Nature herself paints for us the portrait of a friend, or those scenes which are endeared to us by the tenderest and most refined associations.

We have now the means of obtaining the most truthful representations of the Pyramids and the tombs of Egypt. The Assyrian Excavation Society have realisations from the pencil of the sunbeam of all that remains of the great monarchies of the East. The traveller in Central America has secured, with his camera, pictures of the wonderful works of the Aztecs and the contemporary races, of whom

we know so little, but whose works remain to speak of a savage grandeur and an advanced state of art, rivalling that which we find in the palace of Sardanapalus and the temples of the early Pharaohs. The ethnologist rejoices in his collection of portraits from all parts of the world; in his quiet home he is enabled, by the aid of photography, to study the physiognomies of all the races on the face of the earth.

The natural philosopher uses the same art to register for him the variations of atmospheric pressure and of the earth's temperature; more than this, the alterations in the magnetic intensity of this terrestrial globe are now faithfully registered by photography. The microscopist makes the light draw for him the details of organisation, which it would be impossible for the human hand to trace. The astronomer places a sensitive tablet in his telescope; and not only does the sun draw his own image, but the milder moon traces out for him her mountains and her valleys, her beetling precipices, like old sea-coasts, and her dreadful volcanic craters, large and deep enough to swallow up all England.

What, then, may we not expect from photography, with the advance of science?

A few years since it was thought that two or three salts of silver and of gold were the only bodies which underwent any remarkable change when exposed to the action of the solar rays.

It is now proved that it is not possible to expose any body, whatsoever may be its character, to the action of sunshine without its undergoing a chemical or a mechanical change. For example, take a plate of glass, of metal, of stone, or a surface of leather, or resin,—in fact, any organic or inorganic body, and placing a perforated screen above it, expose it for a short time to solar influence; then treating

the plate as we do the Daguerreotype,—exposing it to the vapour of mercury,—we shall find a picture of the superposed screen most faithfully made out on the surface; proving thus that it is impossible to expose any substance to sunshine without its undergoing a change; and that constant sunshine would be destructive to the permanence of matter, as now constituted. It has, however, been found that Nature has a beautiful provision for restoring the deranged conditions. During darkness, by the action of some peculiar molecular forces, all bodies possess the power of restoring themselves to the state in which they were previously to the *destructive* action of the sunshine; and as night and repose are required to restore to the animal and vegetable economy the vital forces which have become exhausted by the labours of the day, and the excitements which depend upon light, so are night and darkness required to ensure the permanence of the inorganic masses of the earth's surface.

Can there be a more beautiful provision than this? The laws by which the Eternal Creator works are indeed wonderful and grand; the study of creation's mysteries induces a refinement of the mind, and a holy tranquillity of spirit. No one can arise from reading a page of Nature's mighty volume without feeling himself to be

“A wiser and a *better* man.”

R. H.



The Giraffe. (*Camelopardalis Giraffa*.)

THE GIRAFFE.

(*Camelopardalis giraffa*.)

THE Giraffe is the tallest of all the quadrupeds which walk on the earth, and belongs to that large and important order which live on vegetable substances, and, from chewing the cud, are named by naturalists *Ruminants*. Prof. Owen, in his valuable "Memoir on the Anatomy of the Nubian Giraffe," has shown that the giraffe is closely allied to the family which contains the deers; and that its nature and zoological affinities, so far as its internal structure illustrates them, may be expressed by terming it *a modified deer*.

A native of the warmer parts of Africa, it is organised by an all-wise Creator to browse on the tops of trees. For this purpose it is tall, and has a peculiarly elongated neck. Like the deer tribe it has horns, but they are short, as the extremely long neck "disqualifies it for wielding antlers of sufficient strength and size to serve as weapons of offence." Short as the horns are, they are permanent, and adorn the heads of both sexes,—peculiarities found in only one or two species of deers; they give the head an elegance and a *finish*, the want of which would be very obvious were they not present.

We cannot do better than quote the words of the Hunterian professor,* who has done so much to illustrate the structure of this giant of its order:—"The general form of the giraffe is modified with a special reference to its exigencies and habits, which are dependent upon its geographical position and the nature of its food; the prolongation and extensibility of the hair-clad muzzle, and the peculiar length, slenderness, and flexibility of the tongue, are in

* Owen, "Trans. Zool. Soc." ii. 219.

exact harmony with the kind of food on which it is destined to subsist. The oblique and narrow apertures of the nostrils, defended by the hair which is continued to their margins, and surrounded by cutaneous muscular fibres, by which the animal can close them entirely and at will, form a beautiful provision for the defence of the air-passages, and the irritable membrane lining the olfactory cavity against the fine particles of sand, which the storms of the Desert occasionally raise in suffocating clouds, and which man, and the animals compelled through his necessities to become occasional inhabitants of the Desert, find so much difficulty in excluding."

Dr. Ruppell, the distinguished traveller and naturalist, was among the first to point out a most admirable provision in the position and prominence of its large and lustrous eyes, which are so placed that the giraffe can see its enemy's approach, whether in front or in rear.

The lips and tongue have great powers of mobility, and in the tongue this is accompanied with a faculty of extension only surpassed among quadrupeds by the ant-eaters. The giraffe uses its tongue much as the elephant does its proboscis, and coiling it round the branches of the mimosa soon brings the delicate twigs within reach of its mouth. At the end it tapers to a point so fine that it can go into a small ring. As the giraffe has been furnished with an organ so admirably adapted for prehension, when in confinement it instinctively puts it to use in a variety of ways. Any one going within reach of its depressed and delicate muzzle can hardly fail to have an opportunity of seeing it try to use this exquisitely-formed organ. A female confined in the Garden of Plants at Paris used frequently to amuse itself by stretching its neck and head upwards, and pulling out the straws which were platted into the partition separating it from the next compartment. Mr. Owen mentions

that "many a fair lady has been robbed of the artificial flower which adorned her bonnet by the nimble, filching tongue, of the object of her admiration." He shows that the creature is more guided apparently by the eye than by the nose in the selection of objects of food, as it *munches* the mock leaves and scentless flowers so obtained with great apparent satisfaction; and this want of sensibility accords perfectly with the difference in the size of the nerves of sense and motion which the Professor has shown to obtain in the organ alluded to. One very singular instance is quoted of this "fondness for epidermic productions." This ludicrous occurrence took place during the lifetime of a predecessor of the present giraffes. A fine peacock was kept in the paddock, and as that noble Indian fowl was spreading his expansile tail in the sunbeams, and showing off his charms, one of the giraffes "stooped his long neck, and entwining his flexile tongue round a bunch of the gaudy plumes, suddenly lifted the bird into the air, then giving him a shake disengaged five or six of the tail-feathers, when down fluttered the astonished peacock, and scuffled off with the remains of his train dragging humbly after him."

Long as is the neck of the giraffe, it does not contain more vertebræ than those which support the head of other quadrupeds; but its flexibility is wonderful, and it is impossible to describe the variety of its beautiful movements. Like the swan—by no means the most graceful of walkers or runners—"from the shoulders upwards," it is one of the most charming of creatures; and with its ceaseless play of arching and curving, with its gentle rotation and wave-like rising and falling, that sleek and dappled throat exhibits the entire poetry of motion.

It is interesting to observe the giraffe when it chews the cud, and to see the appearance of the bolus ascending its long neck. Mr. Owen remarks, that the physiologist cannot

fail to be struck with the surprising swiftness with which the contractions of the muscular fibres of the gullet succeed each other. He has pointed out the truly extraordinary development of elastic ligament in the *ligamentum nuchæ*, or "pax-wax," as it is commonly called. We may quote his words:—"This mechanical stay and support of the long neck and of the head commences from the sacral vertebræ, and receives fresh accession from each lumbar and dorsal vertebra as it advances forwards; the spines of the anterior dorsal vertebræ become greatly elongated to afford additional surface for the attachment of new portions of the ligament, which appears to be inserted, on a superficial dissection, in one continuous sheet into the longitudinally extended, but not elevated spinous processes of the cervical vertebræ, as far as the axis."

The giraffe seems to be generally spread over Africa, at least from Nubia to the boundary of the Cape settlements. It is there met with in small herds, and is not so fleet as it was reported to be by some of the older travellers. Mr. Methuen, in his "Life in the Wilderness," often alludes to them; in one passage of his journal he says, "Observed a herd of at least twenty giraffes passing us in an oblique direction. My horse was not a fleet one, but being well acquainted with the habit of these creatures, of keeping to one line up the wind, I calculated my angle and rode to cut them off. I managed to hit two, right and left, both gave a bound, and reeled slightly as the bullets struck them, but joined with their companions in their peculiarly awkward canter, and plunged into the bush." He had killed a male which was above eighteen feet high, about the outside limit of their stature, though some travellers say they have killed specimens twenty feet. Though not very swift they are exceedingly long-winded, and in this way they tire out horses which have had to subsist for some time on desert fare.

The flesh of the giraffe is highly esteemed by the savage races which inhabit Africa. When they have eaten their fill, Methuen relates that the Griquas cut the meat into long flaps, which they hang up to dry in the same way as clothes are strung up after being washed. The hide of the giraffe, which is an inch thick when in a green state, is much prized by the same nation for shoe-soles. In a more northern part of the same continent Major Denham mentions that the tail is made into fly-flappers.

The precocity of the young giraffe may be exemplified by the following facts : a specimen born in the Regent's Park began to take vegetable food when three weeks old, and when it had reached its fourth month this formed the bulk of its meals. It then ruminated regularly like the mother. When three months old it had grown a foot higher than it was at its birth, and by its ninth month it was nine feet six inches high : in nine months it had grown three feet six inches. Another specimen was able to walk when ten hours old, and in eight hours afterwards the walk was developed into something like an attempt to run. The large size of the new-born giraffe as compared with that of allied animals, and the great length of its long and slender limbs, are very striking, and are an evident provision of its Creator with a view to its helping itself to its first sustenance, as well as to the exigencies of its desert birth-place, enabling it along with the parent to escape from the lion and other beasts of prey.*

In 1836 there were seven living giraffes in England, three in the Surrey, and four in the Regent's Park Zoological Gardens. This is the largest number that has ever been brought together for exhibition since the days of the third Gordian, when, according to Pliny, ten giraffes were slaughtered at the millenarian games to gratify the depraved Roman taste. In the Gardens of the Zoological Society six

* See Owen, "Trans. Zool. Soc." iii. 23.

giraffes have been born. The first of these was a healthy male born on the 19th of June, 1839. From over-anxiety on the part of its curators, to assist the mother in nursing it, this interesting tropical stranger died in ten days; but the others having been treated less artificially have thriven as well as any domestic animal could have done. At present there are three specimens, two of which, a father and a fawn, have been "born and bred" in the Gardens. The female, named *Alice*, was the gift of Ibrahim Pacha in 1849, and was caught in the deserts of Nubia. The male is named *Ibrahim*; he was born on the 23d April, 1846, and promises to be as long-lived as was his mother *Zaida*, who spent at least sixteen years of her life in a climate as opposed to that of her birth as can well be imagined. She bore an excellent character as a nurse, and has left her name to the youngest of the three, who is about one year old.

The two adults are fed on clover-chaff, chopped turnips, and oats, and beans, of which they eat from 30 to 36 lbs. a day; and, judging by their glossy coats and healthy appearance, this nutritious mixture must be at the least as palatable as any mimosa-branches however delicate.

We may mention that some naturalists, Dr. Shaw for instance,* have regarded the zômer of Deuteronomy, xiv. 5 (called by our translators "chamois"), to have been the giraffe; but it seems improbable that an animal confined to the remote parts of Africa was ever intended to afford food to the Israelites, even if, to quote Dr. Shaw's words, we presume "that the Israelites during their long captivity in Egypt were not only well acquainted with it, but might at different times have tasted it."

A. W.

* "Travels or Observations relating to Barbary and the Levant," p. 417.

HEARTS OF OAK.

GENEROSITY.

If generosity be the offspring of sympathy and unselfishness, we might well expect to find it strongly developed in the character of a seaman ; for he is almost proverbially regardless of his own interests and full of consideration for the calamities of others.

Perhaps his intimacy with danger and want of forethought may render him forgetful of himself ; perhaps his isolation from general society may make him ready to commiserate all the distressed. Of the propensity there can be no doubt.

“ Why what’s that to you if my eyes I’m a wiping ?
A tear is a pleasure, d’y’e see, in its way ;
’Tis nonsense for trifles, I own, to be piping,
But they that han’t pity, why, I pities they.
Says the captain, says he, (I shall never forget it,)
If of courage you’d know, lads, the true from the sham,
’Tis a furious lion in battle, so let it,
But, duty appeased, ’tis in mercy a lamb.”

There never yet was a true sailor in whose career we might not find some illustration of a virtue so characteristic of the profession, and so honourable to humanity. A few instances may be profitable and interesting to all of us.

On the 29th December, 1807, the *Anson*, Captain Lydiard, was wrecked on the coast of Cornwall, about three miles from Helstone, and the captain’s generous self-devotion was seen to be equal to the valour which he had lately displayed in the celebrated reduction of Curaçoa.

When the ship first struck all was confusion, and the roar of the tempest only mocked the noise of the falling masts and the shrieks of the women. But the voice of the

captain, as, self-possessed and undaunted, he issued his orders to the panic-struck crew, restored hope and created confidence. When the mainmast went overboard it formed, very providentially, a communication with the shore, by which Captain Lydiard encouraged his people to save themselves. Holding on by the wheel, he continued to cheer and direct them as they, one by one, essayed the dangerous passage; and anxiously he watched their happy success or their miserable failure. At last he was about to cross himself, when he was arrested by the cries of some one in the extremity of terror, and, proceeding to ascertain their origin, he found a boy, whom he had lately entered, clinging in despair to part of the wreck, without strength or energy to attempt his own deliverance. Captain Lydiard did not hesitate, for he was resolved that none should perish whom he could preserve. With one arm he held the boy, with the other he endeavoured to support himself over the slippery and dangerous bridge by which he hoped to reach the shore. But his bodily strength, worn out as it had been by toil and anxiety, was not equal to the determination of his soul: the mast escaped from his hold, and the gallant and brave-hearted Lydiard shared a watery grave with the poor child he had so nobly attempted to rescue.

Many such examples of heroic self-sacrifice must occur to the minds of our readers; but among them, perhaps, none has surpassed the noble and determined devotion of Captain Charles Baker and the crew of H.M. Brig Drake.

This ship was wrecked in a fog on the coast of Newfoundland, on the 20th June, 1822. Scarcely was she aground before her condition was hopeless. The sea was so heavy that her boats were successively swamped or stove; and the best swimmer of the crew, who endeavoured to take a line to the shore, was dragged back to the ship, exhausted by the violence of the waves; but Captain Baker and his

men remained undaunted, and were, each one, ready to attempt any desperate enterprise for the safety of their companions. At length the boatswain succeeded in reaching the shore in the dingy (the only boat that would swim), which was, however, crushed against the rocks as he landed. While he was doing so, the wreck was driven near to a dry rock, and Captain Baker ordered the crew to take refuge on it, but he was obliged to reiterate his resolution of being the last to leave before he could induce any of these brave fellows to precede him. When they had all gained this temporary refuge they found themselves but a few yards from the mainland, but they also made the terrible discovery that their asylum would be covered at high water, and the waves were so boisterous that no man could hope to cross the narrow channel.

Still none showed a sign of fear or impatience; but the commander and his gallant band waited calmly for what seemed to them inevitable death. The boatswain now threw across to his comrades the rope which he had taken on shore, and there was another generous struggle among them, every man refusing to be saved until he had been commanded to go by the captain. Forty-four thus landed; six remained on the rock, but one of these was a woman whose hardships had taken away all her energies. The next man to cross took her in his arms and committed himself, thus burdened, to the rope; but that proved unequal to the increased strain, and neither of them reached the shore. The breaking of the rope deprived those who were left of all hope. In vain their friends on shore tied every available shred together to make a line; in vain they sought the nearest inhabitants for help; before they could return to the beach the waves rolled over the last refuge of Captain Baker and the remnant of his noble crew. Single individuals have before and since displayed similar generosity

and heroism ; but, perhaps, no body of men can be pointed out who have done greater honour to the name of seamen, or who have evinced more calmness, intrepidity, and self-devotion, than the crew of H.M. Brig Drake.

We are proud to see our sailors still emulating such glorious examples whenever they are placed in the like unhappy positions. We have not forgotten how they provided for the safety of the women and children when the Birkenhead was lost ; nor how the crew of the Britannia nursed their messmates with the tenderness of women whilst exposed to the ravages of a most malignant and mysterious disease. In those cases which we have mentioned, we have seen men in a common danger disregarding themselves for the sake of their companions ; it remains for us to give an instance of one, who was himself in safety, voluntarily risking his life to save those of his fellow-creatures.

We shall select an incident in the life of Sir Edward Pellew (afterwards Lord Exmouth) when in command of the *Indefatigable*, which not only shows generosity and humanity, almost unparalleled, but is also calculated to teach us of how much value is the influence of a single decided and well-ordered mind in circumstances of danger and confusion.

In January 1796, when the *Indefatigable* was lying in Hamoaze, the *Dutton*, a large East Indiaman, with part of the 2d regiment and many sick on board, was driven into Plymouth by stress of weather ; and, in consequence of a buoy having broken adrift, came ashore under the citadel.

Sir Edward, accompanied by Lady Pellew, was on his way to dine with Dr. Hawker, the excellent vicar of Charles, when he noticed the crowds running to the Hoe ; and, having learned the cause, he sprang out of the carriage and ran off with the rest. Arrived at the beach, he saw at once that the loss of nearly all on board, amounting to between five

and six hundred, was almost inevitable. The captain had left the ship, on account of indisposition, the previous day ; but the officers who were on board had succeeded in getting a hawser to the shore, by which some of the people had landed. This, however, was a slow and dangerous operation ; for the rolling of the vessel as she lay broadside on in the surf, would sometimes jerk the rope high in the air, and then bury it beneath the waves. Every minute was of consequence, for night was approaching, and the wreck fast breaking up.

Sir Edward was anxious to send a message to the officers, and offered rewards to pilots and others on the beach to board the wreck ; but when every one shrank from so dangerous a service, he exclaimed, "Then I will go myself." Availing himself of the hawser which communicated with the ship, he was hauled on board through the surf. The danger was greatly increased by the wreck of the masts, which had fallen towards the shore ; and he received an injury on the back, which confined him to his bed for a week, in consequence of being dragged under the mainmast. But disregarding this at the time, he reached the deck, declared himself, and assumed the command. He assured the people that every one would be saved if they attended quietly to his directions ; that he would himself be the last to quit the wreck, but that he would run any one through who disobeyed him. His well-known name, with the calmness and energy he displayed, gave confidence to the despairing multitude. He was received with three hearty cheers, which were echoed by the thousands on shore ; and his promptitude at resource soon enabled him to find and apply the means by which all might be safely landed. The officers of the *Indefatigable* were in the meantime exerting themselves to bring assistance, although not aware of the position of their captain. Lieutenant Pellewe left the ship in the barge, and Mr. Thompson, acting master, in the launch ;

but the boats could not be brought alongside the wreck, and were obliged to run for the Barbican. A small boat belonging to a merchant-vessel was more fortunate. Mr. Edsell, signal-midshipman to the Port Admiral, and Mr. Coghlan, mate of the vessel, succeeded, at the risk of their lives, in bringing her alongside. The ends of two additional hawsers were got on shore, and Sir Edward contrived cradles to be slung upon them, with travelling ropes to pass forward and backward between the ship and the beach. Each hawser was held on shore by a number of men, who watched the rolling of the ship and kept the ropes tight and steady. Meanwhile, a cutter had with great difficulty worked out of Plymouth port, and two large boats arrived from the Dock-yard under the directions of Mr. Hemmings, the master-attendant, by whose caution and judgment they were enabled to approach the wreck, and receive the more helpless of the passengers, who were carried to the cutter. Sir Edward, with his sword drawn, directed the proceedings, and preserved order,—a task the more difficult, as the soldiers before he came on board had got at the spirits and many were drunk. The children, the women, and the sick, were first landed. One of them was only three weeks old, and nothing in the whole transaction impressed Sir Edward more strongly than the struggle of the mother's feelings before she would intrust her infant to his care, or afforded him more pleasure than the success of his attempt to save it. Next the soldiers were got on shore, and then the ship's company, Sir Edward himself being one of the last to leave. Every one was saved, and presently after the wreck went to pieces.

G. W. S.

MY BROTHER'S KEEPER.

CHAPTER XII.*

Not for my peace will I go far,
As wanderers do, that still do roam ;
But make my strengths, such as they are,
Here in my bosom, and at home.—BEN JONSON.

‘Miss ARNET, ma’am,’ said Tom, opening the sitting-room door one morning.

‘O Marion!’ cried little Hulda springing towards her, ‘is that you? I thought you never were coming here again.’

‘I began to think so myself, pet. Good morning, Alie. Good morning, Captain Thornton! I saw your troop out and supposed you were with them.’

‘Good morning, Miss Arnet. I am sorry you should be disappointed, but I can soon go, if that be all.’

‘You are excessively stiff and disagreeable this morning!’ said Marion colouring. ‘Can’t one give one’s cousin his title without being immediately hailed as Miss Arnet?’

‘It is in the nature of ice to freeze, nevertheless,’ said Thornton.

‘Alie,’ said Marion turning to her, ‘I came to borrow this child—will you let her go?’

‘Ah please do!’ said Hulda who was bestowing on Miss Arnet a small hundred of kisses. ‘I always like to go with you, Marion. But why don’t you come here as you used to?—when we all love you so much.’

* [In resuming this story it is due to the Author to state that the narrow limits of this miscellany have rendered it necessary to omit many scenes and incidents contained in the original manuscript.—ED.]

'Are you sure you do?' said Marion. 'Alie, you haven't spoken to me yet, except with those violet eyes of yours. Will you let Hulda go?'

'Yes, and glad. She is too quiet here with me sometimes.'

'O no I'm not,' said Hulda. 'But I like to go, too.'

'Then run and get ready, pet—get your bonnet, I mean. Don't put on another frock—I'll lace-ruffle you if it is necessary.'

'Why do you plague yourself with that child?' said Thornton.

'I do *not* plague myself with that child. Of all the children I ever saw, she is the least of a plague.'

'Your experience differs widely from mine.'

'You have not studied the subject of counterpoise, Captain Thornton. Things to love one in this world are not so plenty that one can afford to put out the fire of a child's affection for fear it should now and then fill the room with smoke.'

'Very rhetorically expressed,' said Thornton; 'and quite in Rosalie's style. I should think she had been giving you lessons.'

'She gives me a great many that I do not take,' said Marion with a sudden change of expression—'I wish I had ever been more ready to learn! I wish all the world were like her! Alie, my dear, what do you do to me? When you are silent I feel reproved for speaking, and when you speak I feel reproved for the way I have spoken. Your power is like nothing but the old fashion of a lock of hair round a love-letter—very strong, because nobody would break it. One would have small compunction about filing a chain in two, but who could struggle against such a lock as this?—'

'You are riding off too fast on your simile,' said her

cousin. 'The hair bound up only the lady's own thoughts—and was destined to be untied, after all.'

'By the proper person,' said Marion. 'O yes—and I expect to see your power in other hands than your own, by and by. Which is the thing of all others that Thornton least likes to hear. I would not for something be the man to encounter him in such circumstances.'

'Are there any circumstances under which you *would* like to encounter me, Miss Arnet?'

When Miss Arnet and Hulda were gone, the morning passed rather moodily. Thornton seemed disposed for home comforts—or home meditations, and yielded very little return for his sister's kind and delicate attempts to please him. When at last he roused himself to go out, however, he did condescend to signify his appreciation of them.

'You are like nobody else, Alie—nobody else in the world,—Marion is right there. But whether her growing like you would benefit me much, may be questioned. You are a stiff enough little child yourself, and I don't believe would shake her resolution if you could.'

'I am sure I have tried hard to shake yours.'

'My resolution won't shake—or if it does will do no more. It is fast at both ends. And that child thinks she can twirl me round her thumb—and so she can I suppose, in heart, but not in purpose. Well—I thought I had got used to it.——'

'But why cannot you talk to each other peaceably, at least?' said his sister.

'Because having said the most provoking things we could to each other, the less provoking come natural, I presume,' said Thornton. 'I don't think Marion could speak to me as she speaks to other people. There is a kind of lemon-squeezer effect about all she says.'

'I am sure she never speaks of other people as she speaks of you.'

'Well—it may be,' said Thornton. 'Snows, doesn't it? —But I tell you, Alie, it's of no use for you to look sober about this—if you wear such a face people will think my canary bird has a hard jailer.'

It was no prisoner's look that she turned to him, and for that he kissed her more than once before he went.

An hour passed by, and Rosalie had gone up to her room, and was beginning the business of the toilette in a very leisurely and reflective sort of way, when Martha Jumps came in.

'My stars alive!' she said—'Well if you ain't all undressed at this very identical minute!'

'Well?'—said her mistress.

'Well's easy to spell,' said Martha sententiously, 'but whether the gentleman down stairs is agoing over the letters to himself, is a question.'

'What gentleman? I told Tom to let nobody in.'

'Very good,' said Martha; 'but you didn't tell me; and when Tom Skiddy's to the baker's he ain't at the front door, commonly. But do make haste, Miss Rosalie, because ——'

'Because what?'

'O I don't know,' said Martha—'because' never stays put in my head,—it's a kind of floating population. I don't know who he asked for first, neither, but I told him Captain Thornton wa'n't home. I guess it don't much matter ——' said Martha in a satisfied tone, as if it did matter a great deal but all the right way.

'Are you sure I am wanted at all, Martha?'

'Sure as he is—and there's no going beyond that, ma'am. Now you'll soon be ready. My! what white

arms! It's a mystery to me what ever does come over some folks's skins. Miss Rosalie! you forgetfullest of all ladies (in this house),' said Martha parenthetically, 'here's one of your rings on the washhand stand. There—do go.'

'Lovely she is, and he too,' said Martha Jumps to herself as she looked over the balustrade after her mistress, —'and he was here yesterday—that's more. Now if I wasn't honourable, which I am, wouldn't I go down and second all the motions through the keyhole! There—shut fast. Such doors! I should think curiosity'd die an unnatural death in this house for want of air. Well—I'll go look after Tom Skiddy!'

It was indeed a lovely vision that Mr. Raynor saw when the opening door drew his eye in that direction. She was dressed according to the fashion of the day; but her look was like no fashion that the world ever saw.

'I could not come sooner, Mr. Raynor,' she said,—'if that is any apology for keeping you waiting so long.'

'I have been conversing with an ideal presence,' he said with a slight smile, 'and too pleasantly to find the time long. I wish I could hope to go over the same interview with the reality.'

'You have brought your mother back with you?' said Rosalie.

'Certainly—or rather she has brought me. But she was a little fatigued with the journey, and has not been able to go out since; or you would have seen her.'

'So I understood—so she said in the note she was so kind as to write me.'

'The note whose request you were *not* so kind as to comply with,' said he smiling. 'Why was it, Miss Rosalie? Has the old friendship died out on your side?'

'O no—'she said earnestly.

'It died out on mine, long ago,' said Mr. Raynor,—'at

least if transformation be death ; and I should like to have your consent to the new order of things.'

'No, the old was too good to be changed. But Mr. Raynor ——'

'But Miss Rosalie, if you please, I am not ready to quit the subject. I went to Europe with one thing in my mind that I had been forbidden to speak out—though I begged hard for permission. But because we were both so young, I was required to go without telling you in words who was the best loved of all the friends I left in America—which indeed I thought you must know without words.'

She sat silently listening to him, with a face grave and quiet, as if her mind was but half upon what he said,—as if she knew it all already—as if some emergency which she had expected and tried to ward off had come, and she knew what her answer must be, and was trying to strengthen her woman's heart and woman's voice to give it. A look very different from the almost sensitive timidity which reigned there when no deep feeling was in exercise. An expression which Mr. Raynor had seen but once before—and that was on the night of his arrival, when he had watched so long to see it change to one he remembered and liked much better. He did not like it now at all—he would rather have seen *herself* more present to her mind—her colour deeper, and her self-control less.

'Well,' he said at last—and though the voice was gentle it was very grave—'what are you plotting against me? I see you knew all this long ago, and that it has been not quite forgotten in the meantime. I have told you my thoughts, dear Rosalie—tell me yours.'

'I wish they had never been told me—that they had been left to my own imaginings. I wish, oh how much, that if you had any such thoughts before you went abroad, Mr. Raynor, you had left them all there.'

'You might as well wish that I was not Mr. Raynor, at once. And as to not telling them—I'm afraid I should not soon have you really at the head of my house if I waited for your 'imaginings' to place you there. It is high time that my persuasions came in aid.'

She passed her hands over her face for a moment, and then clasping them together and looking up at him that he might see it was no unsettled purpose, she said,

'I cannot leave my brother, Mr. Raynor.'

He looked at her steadily for a moment,—and then as her eyes fell again he sprang up and stood before her, and said,

'But Rosalie! what sort of a reason is that?'

'A good one, if you will take the right point of view,' she said with the same steadiness, except that his look or his words had somewhat moved her lips from their composure.

'Then I take the wrong. It does *not* follow, dear Rosalie, that of two people who love you with all their hearts you should choose the one who has always had you—unless he has all your heart as well.'

'But it does follow that I should give myself to the one who wants me most.'

'I will throw down my gauntlet upon that!'

'Ah you do not take the right point of view. He needs me more than you can understand.'

'I know he would miss you—he could not help that. But—— would you have said this to me two years ago?'

'He would not have been left alone then.'

'And you are left alone now. Forgive me, dear Rosalie—I do not say it in unkindness—but ought you not to take some care of yourself? Is it quite right to think only of another's whims and fancies?'

'He has nothing to do with it,' she said quickly—'at

least not in the way you suppose. But Mr. Raynor ——' She paused a moment and then went on.

'I must tell you all—it is but just. Mr. Raynor, I am the only friend he has in the world! Of all the people with whom he most associates there is not one, there is not one! whose influence for good is at best more than neutral. He does not go the lengths that some of them go—he has a little remembrance yet of what he was—a sense of honour and truth as strong as he ever had. But if he has any regard for my words, any love for me—and you know not how much!—could I be justified in leaving him to the unmitigated influence of worthless companions and unworthy pursuits?'

She had spoken very low at first, with evident grief and mortification; looking up then with her whole heart in her eyes, and yet with those same meekly folded hands, as if beseeching him neither to urge nor distrust her.

He met the look, and then turning abruptly away he began to walk up and down the room,—but more in excitement than in thoughtfulness. Walking as if the disturbed spirit could not subside, and without once looking towards Rosalie.

'You are displeased, Mr. Raynor,' she said at length. 'You think I am trifling with you.'

He came to the end of the sofa where she sat, and took her hand in both of his.

'Nothing upon earth could make me think that! But I cannot bring my mind to look at things as you do,—neither is the feeling wholly selfish. If you could see yourself with the eyes of a third person, Rosalie, you would understand one of the reasons why I want you to be my wife, much better than you can now. Is it right, I must ask you again, to forget yourself entirely? to take no care for yourself?'

‘No—perhaps not—’ she said, but the voice was less clear and steady—‘in one respect you may be right. But one needs to take a very wide view of things. I do not speak without consideration. I know too, that it is not in my hands—that I have no power that is not given me,—and I cannot tell how things will turn out. But God seldom makes the whole path clear before us—it is only the first few steps. Should I therefore refuse to take them? O Mr. Raynor! you have known what it was to live without God and without hope in the world—is anything too much to bring one out of that condition?’

She gathered breath and went on.

‘I have thought—very much of late—of the day when “them that sleep in Jesus God shall bring with him”—when the book of life shall be opened. It is not enough to know that her name is written there—to hope that mine stands by it——

‘I know it is not in my hands’—she went on presently,—‘and yet I cannot leave him!’

She said no more, and sat silent, except for those silently flowing tears.

‘I dare not urge you—’ Mr. Raynor said then. ‘I dare not put my own earthly happiness, nor even yours, dear Rosalie, in competition with another’s eternal welfare. The sick of the palsy was healed for the faith of them that brought him. Surely if ever endeavours were blessed, yours might be! But tell me one thing—was this the *only* reason?’

‘If there had been another you should never have heard this,’ she said.

‘I might have answered that myself.’

He stood silent and grave, as if the struggle were in his mind yet, till she rose up and said,

‘Good bye, Mr. Raynor—you must not stay here any

longer—and for the future we must be only common friends.'

'I must not stay here any longer at present,' he said with some emphasis, 'but I do not give up my claim—it is only postponed. Nay, do not contradict me. And we must *not* be common friends—for I have a more than brother's right to be called upon, and shall perhaps assume that right to watch over you, whether I have it or not. And as for you, dear child,—“The Lord bless thee, and keep thee: the Lord make his face shine upon thee, and be gracious unto thee: the Lord lift up his countenance upon thee, and give thee peace!”'

He went—and as the door closed behind him Rosalie felt as if she had taken leave of the sunshine of life, and turned her face unto the shadows. Hulda thought her sister very tired that evening;—and when late at night Thornton came home and went to take a look at the sweet face whose pleadings he so often disregarded, he found its expression more hard to read than usual. He was sure there had been sorrowful thoughts at work—that the fountain of tears was hardly at rest now; but for whom had they come? Not for herself. He could not trace one murmur on the placid brow, and the mouth seemed to speak what had been her last waking thoughts—'And now, Lord, what wait I for? my hope is in thee.'

But had they been for him? Thornton puzzled over it till he was tired, and went to bed to dream that he had forbidden Mr. Raynor the house

(To be continued.)

THE TRIUMPH OF DAVID.

FULL forty days Azekah's heights
Shone with Philistia's mail :
For forty days had Israel's hosts
Cower'd down in Elah's vale.
And every morn, with growing scorn,
The giant champion came ;
The while each heart in Israel's camp
Quaked at Goliath's name.
With challenge proud and insult loud
God's armies he defied,
" Give me a man that we may fight !"
But not a voice replied.

And now another morn has risen,
And in the distant plain,
O'er corn-fields fair, the tremulous air
Takes back the dews again.
Along the silent path that leads
From Bethlehem—Judah's fold,
The harvest bends ; grain after grain
Drops from its sheath of gold.
Grapes load the vine, the untended kine
Low mournful from afar,
For every hand has seized a brand
And follow'd to the war.

As a sweet face that slumbering seems,
Shut up in soft and silent dreams,

With a stranger presence by,—
Wakes with a glow all magical
Alone, 'neath a loving eye
So, in the silence left by man,
Nature unveil'd her eyes,
And, left alone with God, at length
Woke up in glad surprise.
The bloom of the morning was all untouch'd,
The shyest birds were singing,
And the smallest rill down the distant hill
Was heard in its musical ringing.

Along the path from Bethlehem
One step at length is heard,—
An elastic step, that emulates
The rising of a bird :
A moment's hush, as it pass'd along,
Seem'd borne on the charmed wind ;
But the joyful songs, like parted waves,
Closed up again behind.
Along the path to Israel's camp
The shepherd-stripling trod,
Unconscious of his hidden strength,—
A heart to trust in God.

And he, like Nature, felt the spell ;
The wide-spread solitudes
Seem'd fill'd with God,—the silence rang
With loud beatitudes.
Amidst the quiet of the hills
His youth had pass'd alone ;
" Day unto day had utter'd speech,
And night had knowledge shown."

There, while he kept his father's sheep,
His soul a Shepherd found,
Who fed with truth his gentle youth,
And tuned his harp's wild sound.

Now as with eager foot he throws
The lengthening leagues behind,
The stirring voice of martial noise
Comes borne upon the wind.
Through vineyards brown and trampled down
His steps begin to fly ;
And pressing fast, in eager haste,
He gains the ridges high,
From whence the serried ranks below
Are seen in fair array,
And glittering fields of spears and shields
Glance back the eastern ray.

Unconscious of his country's shame,
His throbbing heart beats high :
Thoughts long repress'd burn in his breast,
And fire his kindling eye ;
And half indignant at his task,
He eyes the vessels stored
With corn and grapes, unfit for hands
That well might wield a sword.
'Twas but a moment :—plunging down
He gain'd the camp below,
Just as the host with sounding shout
Went forth to meet the foe.

He scarce had laid his burthen down,
And with quick footsteps ran

To greet his brethren at their post,
When, all along the van,
That boastful shout died trembling out,
And pale grew every cheek,—
For mid the opposing ranks of spears
Goliath's towering form appears.
Like some bold mountain-peak,
Rising sublime at morning prime,
High o'er the eddying mist ;—
So o'er the circling ranks below
His giant bulk was seen to grow,
And while they moved in shadow dun,
Across the heights the slanting sun
His brazen helmet kiss'd.

With careless strides he bridged the space
That 'twixt the armies lay ;
With calm contempt began once more
The challenge-words to say.
But scarce did Israel wait to hear,
Ere, like a troop of timorous deer,
Scared by the lion crouching near,
They fly in wild dismay.

What tongue can tell the indignant swell
In David's breast that rose ;
The sudden flush of holy shame,
The thought, that fell like lightning flame,
Of e'en Jehovah's awful name
Disgraced before His foes ?
With flashing eyes he turn'd around,
Brief question put, strange answer found.
" And who is this," he boldly cries,
" This mail'd Philistine who defies

The armies of the living Lord ?”
Sordid they answer’d, “ Thus the word
Of royal Saul doth stand :—
The warrior who Goliath slays,
His house in Israel I will raise,
He shall with wealth enrich his days,
And win my daughter’s hand.”

As when from out the o’erflowing hive
The swarming bees are driven,
Now poising high, now hovering down,
A living cloud of dusky brown
Against the clear blue heaven :
Let but the destined queen appear,
The buzzing anarchy
Instinct with conscious order burns,
And sudden loyalty.
So through the disorder’d camp the thrill
Of a strange influence ran,
As David’s words went swiftly round,
Rehearsed from man to man.
The dullest eye, the firmest will,
With sudden impulse bow
Before the strength, that, calm and still,
Sits throned upon his brow.

And now the rumour strange had reach’d
The tent of Saul the king ;
He heard the tale, and gave command
The rustic youth to bring :
Full soon the guards that stood before,
All mail’d and helm’d to keep the door,
Held back its silken fold ;
And, pausing with a modest grace,
Young David stood a moment’s space

Beneath the fringe of gold ;
Then stepp'd before the royal seat,
And, bowing low with reverence meet,
His simple purpose told.

“ Let no man's heart,” the stripling said,
“ For this Philistine fail !
Thy servant will go forth and fight,
And o'er his strength prevail.”
“ Thou art not able thus to meet,”
(King Saul replied in sooth),
“ This man train'd from his youth to war,
Whilst thou hast lived from battles far,
And still art but a youth.”

But still young David answer made,—

“ Once, while thy servant kept
His father's sheep, a bear and lion
Forth from the forest crept :
The bear had seized a helpless lamb,
The lion follow'd hard :
Forth from the fold thy servant flew,
Out of his mouth the prey I drew,
And when he rose against me too,
I caught him by his beard ;
The lion and the bear I slew,
For God my prayer heard.
And this Philistine giant soon,
Seeing he thus defies
The armies of the living God,
Like one of them he dies !
The Lord, who then deliver'd me
Out of the lion's paw,—
The Lord, who saved my life from out
The cruel jaw,

He will again beside me stand,
To save from this Philistine's hand."
Then answer'd Saul, "Thou hast thy will;
Go,—and the Lord be with thee still."

Amidst the armèd men he stood
In simple shepherd guise;
The unshielded breast and helmless head
Seem'd weak to mortal eyes.
But, far outshining polish'd steel
Or glittering helmet's blaze,
His glorious panoply of faith
Dazzled the angels' gaze.
Not him alone they watch'd, but far
Within the future years,
Their eyes a greater David saw,
And wept prophetic tears.

Now, half in pity, half in pride,
Saul gives the royal word
To bind a helm on David's brow,
And o'er his breast the mail to throw,
And let his limbs in armour glow,
And give his hand a sword.
But high against the straining mail
His heart begins to swell;
Close-fetter'd by the clasping steel,
Th' elastic limbs rebel.
One doubting step he forward made,
Then turning frankly round,
"I cannot go with these," he said,
And laid them on the ground.

Then taking up his shepherd's crook,
He hasten'd towards the van;

But, pausing by the silver brook
That through the valley ran,
Five smooth and rounded stones he chose,
Worn by the running stream,
And placed them in his scrip, and cross'd
Before the dumb astonish'd host,
Who gazed as in a dream.

Unarm'd, save for his shepherd's sling,
He drew towards the foe,
Who, cased in steel from head to heel,
Came onward pacing slow ;
And one that bare his monstrous shield
March'd on in state before,
While the barbaric hosts behind
Sent up the applauding roar.
And now his heavy footsteps paused,
Scornful he look'd around ;
His far-thrown gaze young David miss'd,—
But, glancing to the ground,
Sudden he spies the slender youth
Who through the vale advances,
Ruddy and fair, with golden hair,
On which the sunlight dances.

With fierce disdain his lips are curl'd
To see such champion stand
In answer to the challenge proud
Of his victorious hand.
“ And com'st thou me with *staves* to meet ?
Soon shall thy tender flesh and sweet
To the wild beasts be given ;
To nourish the fierce jackal's young,
And feed the fowls of heaven.”

Alas ! our chilling western tongue
Freezes the glowing thought ;
But from that scene a Hebrew bard
Had inspiration caught :
That youthful form, all Heaven-inspired
With mingled strength and grace ;
The radiant light of triumph sure,
Of purest courage, faith as pure,
That shone on David's face.

The while he answer'd, calm and clear
Each word thrill'd through the list'ning ear :
" Thou com'st to me with sword and spear,
Helmet and ponderous shield ;
I come to thee with weapons far
More powerful in the ranks of war —
The God who rides the tempest's car,
As God of hosts reveal'd :
His arms my shield and buckler are,
His name the sword I wield.
That God whose strength thou hast defied
Shall, here, to-day, 'twixt us decide ;
And all the hosts shall know
That not by earthly spear or sword
Comes the salvation of the Lord ;
But, when He speaks th' almighty word,
The strongest arm lies cold and low,
Subdued before the feeblest foe."

Scarce had those words, so strangely bold,
Left silence in the air ;
Scarce had the grim Philistine time
To poise his monstrous spear ;

Before young David forward sprang,
And hastily a pebble slang,—

Like arrow from the bow.
Shrill through the startled air it rang
And smote the giant's brow.
Deep in his forehead sank the stone,
And with a mighty crash and groan
Dead fell the great Goliath down.

All fresh from the unbloody fight
The victor hasten'd on,
No weapon in his hand with which
His victory to crown.
But standing on Goliath's neck
He seized the giant's sword ;
From its broad sheath he drew the blade
And sever'd at a stroke the head
Of the Philistine lord.

But even then, a moment's space,
Dumb silence linger'd still
Along the ranks on either side
That throng'd the vale and hill.
Then, with a cry of victory,
That shook the earth and rent the sky,
The hosts of Israel rose ;
While, in a flood of wild despair,
Fled fast their heathen foes.
Far down in Ekron's valley green
The ghastly heaps of slain
Mark'd all the route of fierce pursuit
As far as Shaaraim's plain ;—
And long the loud Philistine wail
Told of the fight in Elah's vale.

Three thousand years well-nigh have slipp'd
 Out of the hand of Time,
 Since that strange solemn victory
 In the far Eastern clime.
 And long since then, yet long ago,
 Leaving a heavenly fold,
 Another Shepherd came to seek
 The brethren loved of old.
 "His own received Him not"—as towards
 The deadly fight He drew.
 He conquered Sin, the giant Death
 With its own weapon slew.
 He died, yet lives again, to lead
 His ransom'd armies on :
 Who trusts in that victorious Name
 Can ne'er be overthrown.

But still the final victory
 Pauses a moment's space,
 Before in His triumphal car
 Rides forth the Prince of Peace.
 —A moment to the thoughts of God,
 But weary years to ours ;
 For still the battle rages on
 Through the slow-circling hours ;
 Still in a thousand different forms
 Of sin, or care, or sorrow,
 The weary conflict of to-day
 Revives with every morrow ;
 And still the same, yet changing still,
 The giant's challenge comes,
 Now, in temptation smooth and fair,
 Now, like the spectre of Despair,

That wrings the hands and rends the hair,
Weeping o'er early tombs.

Alas ! to think of all the woe,
Of all the shame and sin,
That every morning's golden gates
Usher the world within :
The guilty weakness yielding still
To Satan's challenge-word,—
The busy hands that still will strive
A mortal sword to gird.
O for a pause,—an upward glance,
To see the two-edged brand
Stretch'd down from out the highest heavens
Held by a piercèd hand.
Oh, take the Spirit's sword ; let faith
Be as thy seven-fold shield ;
Salvation's golden helmet take,
And pass into the field.
Whate'er the sorrow or the sin
That may thy faith assail,
Lean on the strength of Christ the Lord,
And thou shalt yet prevail.
Remember every step was trod
Before thee by the Son of God.

Dream not—desire not that the fight
Should for a moment stay ;
For every hour that passes on
Nears to thy grasp the victor's crown ;
Each step thus trod in conquest down
Shortens the weary way.
And if, amidst the unequal strife,
Unwounded, and thy cup of life
Brimm'd with delight and peace,

Oh, think what wondrous talent stands
Entrusted to thy sinful hands,
The gift of happiness.

Look where the fainting warrior lies,
Borne from the thickest fray ;
Refresh his parchèd lips, his head
On thy warm bosom lay.
Thus follow Him who gently blest
The weary heart and gave it rest.

Obscure in massive thunder-clouds
Stretches the battle far.
One point alone of all the field
Where rolls the tide of war,
Within thy feeble gaze can fall ;
Then trust to God the mighty all.
When fallen are those who firmest stood ;
When strange afflictions come,
Baffling the keenest gaze that would
In seeming ill find certain good,
Then trust Him, and be dumb.
Trust Him in darkness as in light,
Faith is for earth,—for heaven, sight.

But, ah! the type that lives within
This old heroic story,
That thread of gold, how poor and cold
Beside the greater glory !
Yet dazzled eyes, that vainly strive
To gaze upon the sun,
Will almost hail the silvery veil
Which passing clouds have thrown ;—
And thus our eyes may fondly pause
O'er the historic word,
Where shrouded in young David's form
We read of David's Lord. F. A. P.

DR. KITTO.

JOHN KITTO was born at Plymouth, December 4, 1804. His father, a Cornish man, was in his earlier days a master-builder, but gradually sank to the occupation of a jobbing mason, in which he was glad of his son's assistance when a mere boy of eleven years old. No wonder that the lad's education was very defective, and rendered more so by the frequent headaches which often made his attendance merely nominal,—so that at twelve he was an indifferent writer and a worse cypherer. At this period an event occurred which was the great crisis of his life. One day, while assisting in new-roofing a house, he lost his footing, and was precipitated from a height of five-and-thirty feet. A few moments excepted, he lay in a state of unconsciousness for a fortnight. At the end of that time, though suffering great general debility, it was found that he had escaped from all permanent injury except the total loss of hearing, of which he was first apprised by one of the bystanders round his bed holding before him a slate inscribed with the awful words that needed no Daniel to interpret, "*You are deaf!*"

Unable to resume his former employment, he seemed to be consigned for the rest of his days to a state of useless dependence. His bodily wants were, indeed, provided for as far as the limited resources of his family allowed; but the spirit of that lonely boy craved its appropriate nutriment long before the possibility was revealed to him of being the master of a feast for other minds. Yet here, where sympathy would have been doubly precious, it was wanting, and but for the compassion which his outward condition called forth, ridicule would have accompanied the wonder excited at his strange fondness for poring so many hours over Kirby's

"Wonderful Magazine," or Drelincourt on Death, with Mrs. Veal's ghost-story by that most truth-like of all romancers, De Foe ; besides the other score of volumes which made up the scanty cottage book-lore of that day.

As his father's means, instead of improving, became still more contracted, application was made in 1819 to the guardians of the poor for John's admission into the workhouse. Here he was set to learn shoemaking, and in 1821 was bound to a person of that trade in the town. This, we suspect, was the period referred to in his work on "The Lost Senses" as a "terrible time," when he was under a task-master of the Egyptian order from six in the morning till ten at night. "I tried to be happy, but it would not do ; my heart gave way. Twelve hours I could have borne ; but sixteen hours, and often eighteen, out of the twenty-four, was more than I could bear. To come home weary and sleepy, and then to have only for mental sustenance the moments which by self-imposed tortures could be torn from needful rest, was a sore trial ; and now that I look back upon this time, the amount of study which I did, under these circumstances, contrive to get through, amazes and confounds me, notwithstanding that my habits of application remain to this day strong and vigorous. Since then I have had many difficulties interposed between me and what I believed to be proper objects of my existence, but not any that I think equal to this ; and it did certainly evince a degree of enthusiasm and industry which I am now fully able to appreciate,—thus, without any encouragement of praise or approbation, to macerate the toil-worn body by the denial of needful rest, and even by painful infliction, for the sole sake of that nourishment of mind in which my chief good—the good most suited to my condition—had been found."

It is very striking to observe how every event in Kitto's

early life, which in itself wore a sinister aspect, actually carried him onward towards that eminent position which he ultimately occupied. Before the accident which deprived him of the sense of hearing, he states that he was "a voracious reader," so that the effect of his isolation from human converse was not to create, but only to intensify and concentrate, a passion already glowing in his breast.

Had Kitto been placed with a person of average probity and kindness, he might have been fixed for life in a position which would have repressed for ever all the noblest yearnings and aspirations of his heart. But the oppressive conduct and worthless character of his master rendered an appeal to the magistrates necessary. The charges having been substantiated, his indentures were cancelled, and he became once more an inmate of the workhouse. But this was not all. Owing to his deafness, his allegations were prepared in writing, and attracted notice and admiration for the accuracy and propriety of the diction. Such was the impression made on the minds of others; but the effect on Kitto himself was still more important. It gave him a consciousness of mental power till then unknown, and prompted him to his first attempts in authorship, which appeared in the "Plymouth Weekly Journal," having accidentally come under the notice of Mr. Nettleton, one of the proprietors. His own words will best describe the buoyant vigour which now animated him, and effected in his whole mental interior a change as great as the sudden verdure of a northern spring contrasted with the congealed desolation of winter. "I had learnt the secret," he says, "that knowledge is power, and if, as is said, all power is sweet, then surely that power which knowledge gives, is of all others the sweetest. And not only was it power, but safety. It had already procured for me redress of wrongs which seemed likely to crush my spirit; and thus bestowed upon me the gratifying, I had

almost said proud, consciousness of having secured a means of defence against that state of utter helplessness and dependence upon others which had seemed to be my lot in life. It does seem to have been the turning-point of my career. At a critical time of life it gave the bounding consciousness of essential vitality of subsistence to the higher realities of life—to one who had seemed

‘Dead more than half;’

and small as was the key, it seemed to open the door to a large world of hopes, which had till then seemed closed for ever against me.”

Encouraged by Mr. Nettleton, and another gentleman, Mr. Harvey, Kitto published in 1823 a small volume of essays and letters, with a short biographical sketch of the author. From the list of subscribers, it is evident that considerable interest had been excited on his behalf; and although this juvenile production is chiefly interesting at the present time from the subsequent celebrity of its author, yet it is pleasant to notice in the germ those intellectual and moral qualities which bore such admirable fruit at a later period.

Of the following years several were spent in foreign lands. He first went to the Mediterranean in company with Dr. Korck, a German physician, who had just taken orders in the Anglican Church, and Mr. Jadownicky, a converted Polish Jew lately arrived from America. At Malta he resided for nearly two years, and subsequently sojourned for three years at Baghdad. In his wanderings he visited most of the countries bordering on the Mediterranean, besides Persia and Russia. He speaks of having gazed on the glory of the Grenada mountains; he caught the Titanic shadow of Etna on the horizon; he spent many days among the glories of the Caucasus; he gazed with wonder at the cloudy ring of the volcanic Demavend; and mused day by

day on the dread magnificence of Ararat with intense and reverent admiration. This we believe was about the year 1829, within six years or so from a residence in the Plymouth workhouse ! What a marvellous transition, mental and physical ! He traversed Armenia in winter, and in the previous autumn had gathered grapes on the unfrequented streams of Georgia. He wandered among the endless fir-forests of Northern Europe as far at least as Moscow and Tver ; while in Asia he had beheld the magnificent plane-trees of Media ; he pitched his tent amidst the splendid palm-groves of the Tigris ; and explored the sepulchral sites on that river and the Euphrates with interest and awe.*

It is a singular fact that, under an improved phase of exterior circumstances (we quote his own words), Dr. Kitto's literary predilections never obtained encouragement, but were opposed as an unreasonable infatuation. But happily for himself, and for the world, he acted on his soul-felt convictions. He called into vigorous exercise all the resources at his command, and the kind providence of God directed him to an individual eminently qualified to form a correct estimate of his talents and acquirements. To the generous confidence of this true friend, Mr. Charles Knight, the public are indebted for that work which established Dr. Kitto's reputation as a biblical scholar, the "Pictorial Bible." This great and unique work was published anonymously—its success therefore was not owing in any degree to sympathetic interest felt for the author, but to its intrinsic merits.

The publication of the "Cyclopædia of Biblical Literature" was commenced in 1843, and completed in 1845. In a letter to the writer of this notice, dated May 17, 1842, Dr. Kitto says respecting it,—“The chief object will be to embody the results of recent researches in Biblical litera-

* Under the title of "Notes of a Deaf Traveller" he gave his impressions of foreign lands in the "Penny Magazine" for 1833.

ture both in this country and abroad, to have fresher materials, and to exhibit old facts in their new developments. Calmet has been reproduced in so many forms, that it is hard to say what it is that his name does or does not describe. However, generally speaking, I should say, that if my intentions are carried out our book will have more resemblance to Winer's ["*Biblisches Realwörterbuch*"] than to Calmet's. I believe that 'the religious public' are prepared to go a good way ahead of the Calmetish dictionaries; *how far* it will be one of our objects to ascertain, and we must be careful not to offend hastily or roughly the daintiness of the English appetite." This work, the joint production of about forty contributors, of whom the editor was by no means the least distinguished, has been properly described as "a noble monument of learning, dedicated to the illustration of the sources of our common Christianity."

Our limits will not allow of an extended notice of Dr. Kitto's "*Pictorial History of Palestine*," nor of his "*Journal of Sacred Literature*;" the latter occasioned him, probably, more anxiety and harass than any of his publications. After some years of toil he was obliged to relinquish it, but had the satisfaction of seeing it placed on a firmer basis, and under the superintendence of the present accomplished editor, Dr. Henry Burgess.

Passing over several minor, but valuable publications, we cannot omit the last, and in some respects most important, work of this indefatigable man,—his "*Daily Bible Illustrations*; being Original Readings for a Year (Morning and Evening) on subjects from Sacred History, Biography, Geography, Antiquities, and Theology, especially designed for the Family Circle," in eight volumes, the last of which appeared in January 1854. By his former works Dr. Kitto had established his reputation as a biblical scholar; but in this, while maintaining that reputation full-orbed, he

has thrown around it a halo of piety that renders it an object of ten-fold interest. Seldom of late have we seen a finer exhibition in the same person of the scholar and the saint. Scattered throughout these inestimable volumes there are allusions to his personal history, made with the utmost simplicity, which (though nothing could be more foreign to his intention) attest the depth of his piety, and show how closely he "walked with God."

That his career should close at the comparatively early age of fifty is not surprising, if we consider how much he accomplished under circumstances scarcely to be paralleled. The necessities of a young and numerous family permitted not the slightest relaxation in his labours, and for their sakes he was obliged to part with the copyright of all his works at the time of their publication. The pension from the Royal Fund of 100*l.* per annum was only obtained when symptoms of failing health had begun to appear. How far the headachs of his boyhood were premonitory of the disease which at last proved fatal, we cannot pretend to say. But for the last two or three years most distressing neuralgic affections prevailed, and ended in paralysis. Absolute cessation from all mental exertion was pronounced to be indispensable to recovery. A subscription, as most of our readers are aware, was opened in the spring of last year to raise the necessary funds for the immediate wants of Dr. Kitto and his family, with a view, also, to a more permanent provision. It was thought that a residence on the Continent offered some advantages in preference to remaining in his native land; and in August last, Dr. and Mrs. Kitto and their family removed to Cannstatt near Stuttgardt, a town beautifully situated on the river Neckar, and famed for its mineral springs. Here, however, it pleased God to exercise the faith of His servant with fresh trials ere his own departure. His youngest child, an infant, sickened

and died, after about five weeks' suffering; and in three weeks was followed to the tomb by his first-born, who, previously to leaving England, had been in a very delicate state of health. The feelings of the afflicted parents are best portrayed in the following letter to W. Oliphant, Esq., of Edinburgh:—

“*Cannstatt, Oct. 18, 1854.*”

“It has pleased God to withdraw from us the bodily presence of our dear daughter Shireen, our first-born thus following in just three weeks our last-born to the tomb. During the last twelve days I was as constant in attendance at her bedside as my own condition admitted, and had as much conversation with her as my deafness and her weakness (for finger talk) allowed; and I blessed God in the midst of my distress for allowing me the comfort of finding that she not only submitted to the Divine appointment concerning her, but accepted it with a cheerful spirit, and was enabled to move on, day by day, consciously nearing the unseen world with an unshaken countenance, strong in the assured belief that to depart and to be with Christ was far better for her than aught which life could have in store. I thanked God with all my heart for this high grace granted to her; and while our affections have been deeply smitten by the loss of one so dear and so highly gifted, we refuse not the comfort which the contemplation of a death so serene and cheerful is calculated to afford to those who know that hopeless sorrow is a sin. The circumstances of this great loss, following so soon upon the other, awakened much sympathy among the kind-hearted Germans; and the myrtle-crowned corpse was followed to the tomb by a large train of spontaneous mourners, composed *mostly* of persons unknown to us, and who are not likely to be known. I was not among them; for, although I had seen her die, the doctor and our friends here prevailed upon me to abstain from attending her to the grave. But neither the bier nor the tomb is *here* invested with the dismal incidents and ideas which prevail in England. All is here made significant of cheerful hope, as among the early Christians. All the symbols and inscriptions in the churchyard are of this character, and the yard itself is called the ‘peace-yard’ (*fried-hof*). I forbear to tell you of the many things this dear child was to do for me and with me ‘when she got well;’ and I am not yet strong enough to dwell upon the close affinities of mind and character, and the ever ready and quick apprehension on her part, which drew her very near to me, and rendered my intercourse with her a delight. But all this is over. Year after year, week after week, I

am bereaved of my children; and other trials—frustrated purposes, loss of health, loss of means, expatriation from the land I love—all these, though heavy, seem light in comparison. God help me! and I assuredly know and believe that, even with this large addition to my afflictions, He *does* and will help me, and that His help is sufficient for me in all things.

“My head has suffered considerably from these trials, which necessarily involved the suspension of my usual exercise, etc. But my poor wife, in addition to these wounds to her maternal affections, has had great personal fatigues and nights of watching to undergo; and these together have left her in a state of much disturbed health, from which I trust that rest may restore her. She and I, with our son, have been this day to visit the grave of our two children (for they allowed the little one to be taken up and deposited with his sister), and we found it overspread with very beautiful garlands—free-will offerings of the good people here.”

Up to the 24th of November no material change appeared in Dr. Kitto's health and spirits, except that on retiring to rest the preceding evening he complained of his head, but as that was no unusual circumstance it excited no alarm. About two o'clock, however, on the following morning he awoke, and remarked that he never felt so near being in a fit before. He went to sleep again, arose at the usual time, but at breakfast was seized with giddiness, and in a few moments was insensible. His medical attendant applied leeches to the temples, and bled him in the foot, but in vain. It was evident that his last hour was come. Two or three times he murmured to Mrs. Kitto, “Tell me, is this death?” and she was obliged to intimate that it was. The information did not appear to affect him, and after a day of intense suffering, during which he retained his consciousness, though unable to converse, he breathed his last. The day before the fit seized him he said that he was tired of life, and did not care to be as he then was, useless in the world.

J. E. R.

REVIEW OF THE MONTH.

WITH all its stirring incidents, 1854 is ended. The Crystal Palace is a realisation; Oxford is open to Dissenters; England and France stand side by side in a chivalrous alliance; war has been declared against Russia; and in the capture of Bomarsund, and in the victories of Alma and Inkermann, triumphs have been won, of which the moral grandeur is equal to the martial glory. With its fatal epidemic, with its fearful disasters at sea, and with the thousands who have fallen on blood-stained fields, it has been a grave and solemn year to Britain; and yet it has been a year of many mercies. Of these mercies, as still more precious than the plentiful harvest, we would mention the spirit of devout recognition which the Most High has poured out on the country, and of which the Fast in April and the Thanksgiving in October were the marked expression. Some steps have also been taken in the right direction with a view to the improvement of public morals. The whisky-shops of Scotland are closed for the whole of the Sabbath, and the taverns of England are open for only five hours of that day; whilst the compulsory attendance in reformatory schools of juvenile delinquents promises to rescue from ruin many who were only hardened in the hulks and the prison.

To the long annual obituary already including theologians like Stanley Faber; philosophers like Schelling; naturalists like Newport, Wallich, Jameson, G. B. Sowerby, Webb, Forbes, Bischoff, Mirbel; poets and men of letters like Silvio Pellico, John Wilson, James Montgomery, Caroline Bowles, Emily Judson, Sir T. Noon Talfourd; and artists like Martin; we have now to add the names of Léon

Faucher, the great Free-trader among the political economists of France; John Gibson Lockhart, the clever editor of the "Quarterly Review;" Dr. Kitto, the illustrator of Scripture; and Dr. Barth, the traveller, who, after reaching that forlorn terminus of African adventure, Timbuctoo, has shared the fate of his gallant predecessor Major Laing.

But our limits forbid a longer retrospect, and hardly leave us room to glance at the new literature at this moment on our table.

Mr. Leone Levi has published a "Manual of the Mercantile Law of Great Britain and Ireland." Although primarily designed as a text-book for the students attending the author's classes in King's College, the work is sufficiently complete for private perusal, and is so free from technical terms as to be intelligible to lay readers like ourselves. Mr. Levi's great work, "On the Commercial Law of the World," has excited much attention in other countries, as well as in Britain, and has been decorated with gold medals by the sovereigns of Austria and Prussia. We understand that there is every likelihood that a conference on the subject of a common mercantile code for all nations will be held at Paris during the "Exposition" of next summer; and should the happy consummation be at last brought about, no small share in the honour will be due to him whose Herculean labours have left an easier task to his successors.

In "The Ladies of the Reformation" the Rev. James Anderson has given, with admirable taste and fidelity, the history of the most distinguished female worthies who adorned this country and the Netherlands in the sixteenth century. "Preces Paulinæ" is a series of meditations on the prayers of St. Paul, by an anonymous but devout and accomplished author, and is an interesting idea beautifully worked out; whilst in "The Footsteps of St. Paul," by the

author of "The Faithful Promiser," we have the apostle's biography narrated in a style instructive to the old and engaging to the young. "The Vision of Prophecy, and other Poems," by the Rev. J. D. Burns, are the forth-pouring of a mind rarely gifted and richly furnished, with all its tender affections and holy aspirations, in verse of unusual melody. And although "Philosophy at the Foot of the Cross," by James Augustus St. John, does not accord in some important particulars with our own apprehension of the truth, we cannot withhold the tribute of our admiration from its exquisite imagery and from those faithful confessions in which, "as face answers to face," many a wistful spirit will recognise its own facsimile. We do not expect many readers for the "Literary Remains and Autobiography of H. Fynes Clinton," with a journal written occasionally in Latin or Greek; but it is a noble record of literary enthusiasm, and will be a great treat to many a scholar. "The Englishwoman in Russia" contains many curious details of Russian home-life and habits, without any profound analysis of Russian character. When we opened Mr. Edgar's "History for Boys," we could not think how he had condensed the whole of modern Europe into a cabinet volume; but after reading some of its clear and unencumbered narrative, we can recommend it as well fitted to familiarise our youthful readers with the great landmarks in modern history. "The Peasant Boy Philosopher," by Henry Mayhew, is Joyce's "Scientific Dialogues" translated into a very charming romance, and must be kept out of the hands of youngsters who show too great a turn for mechanics or useful knowledge; just as "The Forest Exiles," by Capt. Mayne Reid, is enough to send off every schoolboy to the Wilds of the Amazon. Of these last volumes neither can be surpassed, — the one as a charming introduction to natural philosophy, the other as an enticement to the study of natural history.

In "Knowledge is Power," Mr. Knight has provided the lovers of sound information with a store which they will not quickly exhaust, but so various and inviting that they will not readily tire.

This is the season which used to effloresce in "Evergreens," and "Forget-me-nots," and all that showy tribe of New-Year Annuals,—for which the artist and binder did more than the author. No doubt, famous poets contributed sonnets and ghost-stories; but these sweepings of the study formed a tawdry frame for the sketches of Turner and the engravings of Finden. But, thanks to improving taste, a better system is beginning to prevail, and the season of gift-books is now the occasion for bringing out splendid editions of the favourite bards of Britain. The change is a happy one. We congratulate the poets who paint and engrave on their fellowship with the poets who sing; and now that they are "married to immortal verse," their pictures need not fear the early widowhood and the consequent Indian immolation to which they were doomed when mated to those short-lived Annuals. We have now before us several of those exquisite volumes, in all the attraction of green, and scarlet, and gold,—with pictures and a letter-press on the rich creamy page, so charming as to form of themselves "a vision of delight." We can only add their names, leaving it to Friendship to select its congenial offering. Cowper's "Task," illustrated by Birket Foster (Nisbet); Longfellow's "Golden Legend," illustrated by Birket Foster and Jane E. Hay (Bogue); Milton's "L'Allegro and Il Penseroso," with etchings on steel by B. Foster (Bogue); Goldsmith's "Deserted Village," illustrated by the Etching Club (Low); Scott's "Marmion," illustrated by B. Foster and John Gilbert (Black).



NIGHT VIEWS FROM MY WINDOW.

LUNAR SCENERY.

As I draw back the curtain, a flood of pale, silvery light streams into the quiet room where I take my post for a good portion of the night,—to me ever a period of the purest, the most peaceful, and, I may add, profitable enjoyment. And now the window is open, and there is nothing between me and Heaven, but the dark sky, and the brilliant moon and stars, the work of God's fingers, unobscured by a cloud. It is strange what a difference there is between an open and a closed window. When thus gazing upwards, glass,—even the clearest and the purest,—always gives a sensation of restraint, more or less. You feel there is something material still between you and the boundless depths above,—the mighty expanse into which you look, and where you would fain wander ; but, that once removed, and an undefinable sense of liberty—freedom from all physical restraint—is experienced, and you may soar

away at will. The mind becomes endowed, as it were, with an angelic power and desire, which, although it is for the present denied to the body, will, no doubt, be one day permitted to both to exercise far more fully than at present; such a sensation, possibly, as St. Paul experienced in anticipation when he was "caught up to the third heavens,"* with feelings so strange that, as he avers, he could not tell whether he was "in the body or out of the body."

This desire to explore undiscovered regions seems to be deeply implanted in the mind by God. The traveller who stands upon the summit of a lofty mountain, and looks down upon some strange country as it lies stretched beneath his feet, and marks its undulating hills, its sunny valleys, its green forests, its blue lakes, its winding rivers, and, above all, sees the towers of its peopled cities scattered through the land, is at once carried there in spirit, and an irresistible desire impels him to explore, to seek, to discover, to admire. Or if from the deck of a vessel entering for the first time the studded ocean of the blue Pacific he surveys the innumerable islands which float in their coral beauty, and repose upon the calm wave; if he sees their lofty mountain-peaks shining in purple and gold, say whether he will not feel an irresistible desire to examine them? Will not the distance be annihilated in the quick imagination which already has lent the ship wings for sails, and has landed him at once upon their bright shores? Now, such is the feeling, so far as I can trace it, that is experienced by one who is conver-

* The Hebrews acknowledge three heavens:—

1. The aerial heavens, where the birds fly, the winds blow, and the showers are formed,—in short, the atmosphere.

2. The starry heaven or firmament, wherein the heavenly bodies are disposed. And,

3. The heaven of heavens, or third heaven, as St. Paul calls it, which is the place of God's residence, the dwelling of the angels and the blessed.

sant with the celestial world, when gazing upward at the illimitable and undiscovered regions there, surveying them as they stretch themselves out before you in their immensity, or examining them separately and minutely in their glorious and wonderful detail, their numberless star-islands floating in their own peculiar ocean, and doubtless peopled by their own peculiar inhabitants, and encompassed by their own peculiar and solemn glory—for "the glory of the celestial is one, and the glory of the terrestrial is another." Surveying all this—to the mind so engaged space diminishes, distant worlds draw near, skies bend over you, and stars look down upon you with calm and lustrous, but sweet and familiar gaze; the murmur from planetary worlds becomes audible to the mind; the earth is no longer regarded as the only place inhabited by Intelligence or Immortality, and the grain of dust on which we live as the only country to be explored and examined. Creation widens and expands, a novel sphere of discovery is opened to the inquirer—ten thousand new and unsuspected countries burst upon the sight, and extend themselves before you as a boundless map of sparkling glory. Their nature, their movements, their gigantic size, their terrible swiftness, their silent beauty, their inconceivable distances; the order, the skill, the wisdom of their varied motions and arrangements, their surpassing splendour and loveliness—all presents a scene to the eye unparalleled by anything terrestrial; so grand as well-nigh to overwhelm the mind, but so silent and peaceful in their grandeur as to soothe even while they astonish; and so intelligible in their speaking glory that, in the words of the Psalmist, it may be said of them, "Day unto day uttereth speech, and night unto night showeth knowledge; there is no speech nor language where their voice is not heard; their line is gone out through all the earth, and their words to the end of the world." Filled with such thoughts as those then, and animated by

the strong desire I have mentioned, I endeavour to gratify it in the only way in which, with our present limitations, it is possible, viz., by enlarging my powers of vision.

With a telescope for at once my guide and my bark, I launch forth through the silent night into the dark ocean of space above me. I strike out into the remotest regions of the universe,—I transport myself at will to worlds whose light would never reach the retina of my eye, save through the wonderful instrument whose field it illumines. In imparting to man this discovery, God seems to have yielded to this principle which He first implanted within us, and then afforded us an opportunity thus to exercise ; and with that instrument—whose Greek nomenclature happily explains its power—we can not only see things afar off, but absolutely out of ordinary sight altogether. Like the faith of the Christian, the telescope is to us “the evidence of things not seen” without its aid ; but, armed with this huge artificial eye—for it is nothing more—numbers and figures in vain record, and the imagination as vainly conceives, the distance to which we are borne. Possibly, indeed, there may be Beings in the universe whose eyes are as telescopes, who can see us now from their distant planet, though we cannot see them. We know, at all events, that a very slight alteration in the construction and organisation of the human eye would enable us to see as well as we now can with the most powerful telescope. Already we must have remarked the different powers of sight possessed by different individuals ; the cause of these differences is well known. A few degrees more of improvement beyond what we possess now, and man’s unassisted sight would pierce the remotest heavens.

Thus prepared, then, I take my post, I keep my watch to-night.

There is something at once soothing and exciting in this midnight, breathless stillness of the terrestrial world,

and the calm, divine repose of the celestial regions, whither I am about to journey. The air is so still that the least sound becomes audible. I hear the midnight chime of the bells from the distant city ; and now, as the sound dies away, the roar of the surf as it breaks with softened murmur, tossing its green waves and glittering spray in the clear moonlight upon the neighbouring shore : but nought else, save now and then the gentle rustle of a withered leaf as it falls without, or the impatient chirrup of the little bird whose sleep I have disturbed in the clustering passion-flower that hangs in dark masses from the window. I direct my telescope to the heavens, and, passing it slowly from star to star, I at length fix it upon that bright moon, now in her first quarter. I apply my eye to the glass, and now—what do I see ? It brings that beauteous globe so near that I am absolutely upon it ; but what a strange metamorphosis ! No one who has been accustomed to see it from the earth would recognise it. Like a face which appears beautiful at a distance, but is found full of wrinkles and imperfections when close to it ; so our lovely satellite, whose beauty has lent inspiration to the poet's verse, and her charm to the painter's landscape, loses her perfections in a moment. She is no longer the soft, tender, liquid, silvery thing, whose familiar face we love, and whose beams we hail, whether breaking through the sea of clouds among which she sails, or whitening the grey ruin, or shining on the placid lake, or the waveless sea. No ; I perceive a huge bright mass, full of holes, rents, and fissures : it is a strange-looking country, indeed, that we have arrived at—a wonderful place, unlike anything we could have imagined, so different indeed from the expectations usually formed by those who (hearing of mountains and valleys in the moon) long to see them, that, to prevent disappointment, some explanation is necessary to enable such persons to understand what they see, and teach

them what to look for and how to find and appreciate the objects of interest there. To such of our readers, then, as are unaccustomed to telescopic observation, I would say, there are a few obstacles in the way of appreciating lunar scenery which you must be prepared for beforehand. For instance, at the first moment your eye is applied to the telescope (say, with a power of 120 upon it), you will find yourself within 2000 miles only of the moon; in fact, you will see it precisely as you would if you were removed bodily and placed upon a planet separated from it by that interval: short, indeed, when compared with the actual distance of the moon from the earth (240,000 miles) or with other astronomical intervals, and yet still very considerable, as can easily be understood by thinking what a distance 2000 miles is with reference to any terrestrial object,—it is, in fact, equal to a fourth part of the diameter of our globe, or one entire diameter of the moon from herself. At such a distance here, were a bird's-eye view possible, how little could be discerned! At this distance, indeed, it is plain no minute object could be seen; but yet it is astonishing how much is visible, and the general features of the lunar surface are at once quite perceptible to the practised eye. But there are three striking effects in particular which this proximity immediately produces. The first is increase of brightness, as when a lamp or candle is brought close to the eye. The second is increase of size, or the angle subtended at the eye; and the third, distinctness of shape, both as to the general figure of the moon herself, and the objects discernible upon her surface. The first of these is intense, and even painful to the eye not accustomed to it, so that an inexperienced observer sees but comparatively little at first from the glare. If he wait a little, however, the eye soon accommodates itself to the brightness, as it does to the darkness. It is, however, a good plan with powerful telescopes (as there is

always abundance of light to spare), to shut off a portion of it by a diaphragm upon the object-glass, which likewise has the effect of increasing the distinctness.

The second effect, increase of size, is not so perceptible as might be imagined ; and there are few telescopic effects in which the eye is deceived more than in forming an estimate of the size of objects. . A power such as I have mentioned would increase the size of the moon superficially 120 times, so that in the portion of the lunar surface before the eye, all comprised within the space, say of a 4-inch achromatic, such as I am now using, you have an image of the moon magnified 120 times, or 120 times larger than as seen with the naked eye. This amount of magnifying power will have the immediate effect, not of swelling the dimensions of the moon accordingly, which the ignorant or inexperienced might expect, but which a moment's reflection will show to be impossible, as the space you can see must be limited by the actual size of the aperture, but it will have the effect of enabling you to see a *small portion only* of the body made so much larger by optical power, that it cannot fit, as it were, within the small aperture through which you look, and only presents a small portion of its surface at a time, leaving to your imagination the remainder of a huge moon to be examined in its various parts in succession, by simply traversing or moving the telescope over it. The extent of surface, therefore, which you can see upon the moon, will diminish with the increase of magnifying power ; just as in approaching a large city from a distance, at first you obtain a *coup d'œil* of the entire, but as you draw near to it, you see only a street, and at length a single house is sufficient to occupy the entire field of view. So with a power of about 90, you may see the entire disc of the moon at once, but increase the power to 250, and little more than a single crater, with its adjoining neighbourhood, is visible.

The third effect necessary to be prepared for is with reference to the objects which, under telescopic power, become visible distinctly on the lunar surface. Many of these you have never seen anything like before, you are at once led therefore to compare them with, or find a resemblance for them in, something that you *have* seen. This is likely to mislead by conveying a false impression ; the colour for instance, which resembles plaster of Paris, or the innumerable holes or excrescences, which look like bubbles floating upon oil, or caused by fermentation or decay : all these comparisons, which are derived from terrestrial things, are false and must be dismissed ; in fact, you see a perfectly new and strange object, unlike anything terrestrial that could convey to your mind a true resemblance of it. And then, when you have got over all this, and found that the mountains and valleys of the moon you have heard of are not like our valleys, or mountains, or soil, and you at length have succeeded in realising the fact that that great, glaring thing, covered with holes and spots, is really a vast planet or world, there remains the difficulty of realising the size of the separate objects which you see so distinctly—together with the vast distances over which the eye can travel in an instant. A prospect, in fact, is opened to you which could never be seen on earth—even from the loftiest mountain in the world, viz. an extent of 2000 miles, or an area of seven millions of square miles, stretched beneath you ; a plain of 1500 miles appearing but a little patch as in a map, and mountains rivalling the Alps or Andes as a boundary or shading slightly elevated. And yet this, too, can be overcome by a little patient observation, by minute attention to each separate object ; marking not only the object itself, but the shadow it casts. When once the secret of telescopic observation of the moon is thus acquired, there is nothing more delightful than to wander through its

grand and terrible scenery, and no more effort will be required than is necessary to accommodate the gigantic proportions of *our* Alpine regions to the diminutive representation of them by the Artist in a picture one foot square.

And now, where are we to-night? A more beautiful or picturesque portion of the lunar country we could not have fallen upon. We have dropped from our terrestrial sphere right over Copernicus; and from one of the lofty peaks of a cluster of mountains a little to the southward of that remarkable crater—down into the very mouth of one of which, indeed, I can partially see,—let us take our position. What a scene is here! Beneath our feet some thousand feet below, spreads the vast plain of the Mare Imbrium, or Sea of Showers; it is shining in the glare of the fierce light that beats upon it from the rising sun of a lunar morning—whose day will not end for a fortnight—and whose long, black shadows are projecting from a thousand mountain-peaks, whose tops shine like silver, and are scattered over the plain here and there, some in lonely grandeur, others like the well-defined and dark semicircular chain of the Apennines, extending like a continuous craggy coast-line for 600 miles, forming the extreme boundary of the solitary desert they enclose. The shapes of these mountains are discernible upon the plain over which their shadows extend; and there can be no mistake here as to either their configuration or height. The former Nature has thus sketched for us more truly than any artist; and we have only to measure with a micrometer the inky, black outline that lies upon the brilliant surface below, to put ourselves in possession of the latter; and, truly, nothing that earth can produce in her wildest and boldest mountain scenery can come near to the rugged and precipitous character of this gigantic range, some of which rise to the height of 17,000 feet, with summits as sharp as spear-heads; while broken into tre-

mendous precipices, their irregular and fantastic forms, although reminding us of the ice-peaks amid the glaciers of Switzerland and the snow-capped summits of Mont Blanc, are yet marked by a character peculiarly their own, and in the highest degree picturesque and striking, while the imagination placing you before them and compelling you to stand gazing up at them from that burning solitary plain in that breathless world, and contemplating their frowning precipices, their gloomy chasms, and their lofty peaks, and their silent, waveless shores, overpowers you with sensations which no terrestrial scene, however grand, can give, and which no words can adequately express.

But what of the plain? It is called the Sea of Showers. It seems a vast plain of sand,—a sterile desert like the Great Sahara of Africa, or any of our own terrestrial flats. To me, at least, it has a soft, and silvery, and smooth look that conveys irresistibly the idea of sand, or something analogous to it. Certainly no water is there to cool or moisten it now, whatever may have been its former history; and no change whatever has been observed upon its surface such as would be caused by the movements or works of living creatures. After sixteen years' frequent observation, I can say with truth, that nothing could be more perfectly changeless than the face of that silent, ghastly plain. I remember, when first I commenced lunar observations, looking many a night with intense eagerness in the hopes of discovering (and thus immortalising myself by so doing, as I thought,) some change, however slight—but no—no cloud, however faint, dimmed it—no shadow stole over it. On the same spots the same marks, shadows, and craters, reappeared in their silent calmness and majesty, or silvery beauty, or desolate wildness; but nothing moved, nothing changed: and were I there, I feel convinced I should find that nothing breathed or stirred, nor has stirred for ages—that

perfect silence reigns over its desert shores—and motionless, noiseless, breathless, windless nature broods over that arid waste; and yet, I must acknowledge, it looks very like the bottom of a dried-up ocean of former days. Mysterious wavy irregularities creep over its surface like sand-hillocks, thrown up by the action of water, or perchance of wind, but more like the former. Such are the Escars we find in Ireland, one of which I have myself seen in Galway, which extends for thirty or forty miles. The different lights and shades, too, seem to indicate different depths of bottom, as is experienced with the sounding line; and its boundaries or shores, as we may call them, bend into curved bays (such as the Bay of Rainbows), run into creeks, and jut out into promontories, just as we find on the shores of our terrestrial oceans, washed away as they are by the perpetual beat and thunder of the waves.

But, however this may have been, certain it is that not a single drop of water or any liquid whatever evidently exists upon them now. This is the decided conclusion of the telescope which brings every portion of the surface, even to the space of seventy yards, which Lord Rosse's telescope can present to the eye as a visible area, before the sight. This (not to appeal to any other testimony) would in itself be sufficient—as there is not the least doubt, if *there*, water would be seen.

What are we to conclude, then, as to these dry seas or basins which stretch their immense superficies over the lunar surface? Evidently there can be but two hypotheses concerning them, either that they are a preparation for *future*, or the old dried-up basins of *former* oceans. Astronomers have hitherto been inclined to the former opinion as being the more probable; chiefly, indeed, from the abrupt and precipitous manner in which the mountain-chains descend to the seas, the slope being generally towards the land side,

while a steep wall of rock is presented to the plain. This would imply the absence of all abrasion or attrition by the power of water against the lunar shores. Closer observation, however, together with the possession of more perfect instruments, has removed, in a great measure, this objection; and Professor Phillips,* at the last meeting of the British Association, gave his testimony most strongly in favour of the latter opinion; viz., that, although it is probable not a drop of water exists now upon our satellite in the shape of oceans, it is not so clear that it may not have existed there once; and that the dry plains we behold are, in fact, but the beds of oceans now no more.

My own observation concurs fully with this, in fact, I cannot see the soft, wavy outline of those shores, with their sinuous bays and rounded promontories and creeks, and their apparently soft and billowy, sandy surface, together with the undulating character of their scenery, without being deeply impressed with the conviction that water once rolled over them, and waves tossed high their lunar spray as they dashed against those rugged and dreary, but now silent coasts.

J. C.

* The following is an extract from the observations of Professor Phillips upon this subject, at the last meeting of the British Association:—"Prof. Phillips observed, that although there might be no sign of the existence of water on the present surface of the moon, he thought there were many indications of former aqueous action; there were elevations, like the 'escars' of Sweden and Ireland, and small gullies converging into larger, like the channels of mountain-streams." He also called attention to the narrow, dark lines, many miles in length, occasioned by shadows, which change with the direction of the sunlight, showing that the level is higher on the one side than on the other.—*Athenæum*, Sept. 30th, 1854.

(To be continued.)

LIFE, IN ITS INTERMEDIATE FORMS.

No. I.

ANNELIDA.

THE forms of animate existence which we have briefly examined in the previous volumes of "Excelsior," may be likened to the humbler ranks of society; the Vertebrata are certainly the aristocracy; but between these there ranges a great middle class, the most populous, the most ingenious, and in some respects the most interesting, of the whole. They constitute the important divisions which naturalists term ARTICULATA and MOLLUSCA.

We have alluded to the populousness of these sections: a single subdivision of one of them (Insects) is believed to be at least twenty times as numerous in species as all other animals put together.*

We do not expect our readers to study technical zoology at the breakfast-table, nor to make a dish of prawns the text of a lecture; but still, if the function of the palate have not utterly extinguished that of the eye, they can scarcely have picked one of those dainty animals to pieces

* Some years ago an eminent zoologist gave the following table as his estimate of the probable number of existing species of animals, deduced from facts and principles then known. Later discoveries tend to increase rather than to diminish the estimate.

| | | | |
|------------------|---------|-------------------|-------|
| Quadrupeds | 1,200 | Worms | 2,500 |
| Birds | 6,800 | Radiata | 1,000 |
| Reptiles | 1,500 | Polypes, &c. .. | 1,530 |
| Fishes | 8,000 | Testacea | 4,500 |
| Insects | 550,000 | Naked Testacea .. | 600 |

making an aggregate of 577,600 species. (Swainson's "Geog. and Classif. of Quadrupeds," p. 28.)

without having observed that it is encased in a sort of armour composed of many rings, the edges of which overlap, and which thus work one within the other. This circumstance forms the most prominent characteristic of a grand division of living beings, which are thence called *ANNULOSA* (ringed), or *ARTICULATA* (jointed animals). Another mark of distinction is that their skeleton is external; the outer skin, hardened in most cases into a horny crust, affording attachment to the muscles, and giving by its solidity and resistance precision and force to their contractions. In some cases, indeed, this structure is less obvious, the skin being rather membranous than crustaceous, but even there it is more tough and leathery than the internal parts.

But the most important distinction of all, though it is one which is appreciated only by the anatomist, is the condition of the nervous system. That remarkable substance, *neurine*,—which is the material seat of all sensation, and the proximate source of all motion, the ultimate link of matter, whereby the spirit lays hold of it,—is either not discernible at all in the inferior creatures we have been considering, or else exists only in the form of slender threads, without any centres of accumulation. We now no longer find it in this rudimentary condition. In the Articulate animals there is a distinct arrangement of the nerves, which run down the middle of the body in two parallel cords, united at certain intervals by knobs or aggregations of the nervous substance called ganglions, which send forth ramifying threads on each side, thus distributing sensibility to all parts of the body.

There is in all these creatures a distinct head,* furnished with various organs of sense; and for the supply of these the nervous matter is more abundant there than in other parts,

* In some of the Worms, indeed, the head does not exist in its ordinary distinct form, but the organs of sense are present, and the exception is more apparent than real.

forming a thick ring round the gullet and uniting into an enlarged ganglion above it. In conformity with this concentrated condition of the nervous system, the animals which we have now to do with display a perfection of sense, an energy of motion, and a versatility of instinct, which are unknown to those ranks that are below them in the vital scale. In all these qualities, as well as in the physical peculiarities which we have enumerated, there exists considerable diversity ; so that the great division before us is naturally divided into several subordinate, but still important groups.

We could not in these pages review every link in the vast chain of Nature, though we may safely predicate that there is not one which would not well repay the investigation by some fresh evidence of the perfections of the Godhead ; not one which would not testify with fulness and clearness,—

“ The hand that made us is divine ! ”

The humblest class of Articulated animals is that of the Worms (*ANNELIDA*), which are not very remotely separated from those lengthened forms of *ECHINODERMATA*, which we lately considered. An Earth-worm or a Leech is not, indeed, an articulate animal, strictly so called ; but it is an annulose one, for its body is composed of an immense number of rings, which, partially slipping one within the other, impart the power of alternate contraction and elongation, which is so remarkable in these creatures.

Scarcely a single oyster can be dredged from deep water, especially if the ground be rocky, without its being more or less covered with shelly tubes, which sprawl and twist over its surface in various contortions, so firmly adhering to it as not to be removed without fracture. Stones, pieces of crockery, broken glass, and all sorts of shells, are liable to be overspread with these white pipes, after they have been

immersed a short time in the sea ; and similar structures occur, of a smaller kind, about the pebbles that lie on the shore near low-water mark. These are the dwellings of marine worms called *Serpula*.

If we select a shell on which is seated a cluster of these pipes, and put it into a basin of sea-water, we shall soon be delighted with a brilliant spectacle. Let us suppose the tubes to be of that kind which is about as thick as a tobacco-pipe, which is adherent for the most part of its length, but rears upward at its extremity, and displays a smooth circular mouth (*Serpula contortuplicata*). Down in the depth of the interior we presently discern what resembles a cork of a bottle, gradually pushed up till it reaches the orifice, which it accurately fits. It is a conical stopper, of a brilliant scarlet hue, marked with a number of ridged lines all diverging from the centre.

The stopper still emerges, and we see that it forms the end of a long, slender stem, which is slowly pushed out to make room for other emerging organs in the form of a double fan of scarlet threads radiating from a sort of collar, and arranged somewhat like two petals of a flower, with a deep bend or sinuosity where they unite.

The extreme beauty of the display cannot but elicit our admiration ; we raise a finger to point out some particular item to a companion, when, lo ! the whole apparatus disappears like a vision ; with the speed of thought, the whole has been retracted into the pipe, the stopper entering last of all, and tightly closing the aperture.

Our friend *Serpula* is an exceedingly prudent personage, and will not soon emerge from his strong castle again, after receiving such a fright as the lifted finger gave to his sensitive ganglia ; and when he does, it will not be without great caution. Meanwhile, as we are waiting his reappearance, we will briefly discuss some points of his organisation.

Those beautiful fan-shaped petals are gills, the breathing organs of the animal, whereby he derives from the sea-water the oxygen necessary for the renewal of the blood, which is constantly exhausted in the building-up of the various tissues. Their situation at the anterior extremity of the body is a wise provision, since they can by this arrangement be periodically bathed in the surrounding water, with the least possible exposure of the animal. In other species, however, which do not inhabit tubes, the gills are situated on other parts of the body. Thus in the common Lug (*Arenicola*), or Mud-worm, so well known to every fisherman for its value as bait, the gills form little tufts of a crimson hue on the rings of the middle part only. While on the exquisite Leaf-worms (*Phyllodoce*) they resemble heart-shaped leaves, arranged in a row on each side throughout the entire length.

That singular stopper, of which the function is so manifest, is one of a pair of tentacles; organs which in general are exactly alike. Here, however, one is destined to close the orifice, and as one only could perform that office, the other is quite plain, a simple thread, while this is enlarged into a conical plug. What wise contrivance is manifested here!

We wondered at the extraordinary rapidity with which the timid animal disappeared on alarm, and are curious to know the mechanism by which it is effected. Each of the rings of which the body is composed carries on each side a little wart-like foot, within which is a bundle of horny bristles, like the filaments of a hair-pencil, capable of being protruded and withdrawn. The microscopic structure of these is most elaborate, but we cannot detail it here; it may be sufficient to say that it is by the protrusion of these pencils in turn, which press backwards against the sides of the tube, that the animal pushes its foreparts out.

But the retreat requires a more powerful machinery for its extraordinary fleetness ; and this deserves a more close investigation. On carefully examining a *Serpula* recently dead, we observe, by means of a lens, a pale, yellow line running along the upper surface of each foot, transversely to the length of the body. This is the border of an excessively delicate membrane, and on placing it under a high power (say 300 diameters) we are astonished at the elaborate provision here made for prehension. This yellow line, which cannot be appreciated by the unassisted eye, is a small muscular ribbon, on which stand up edgewise a multitude of what we may call combs, or rather sub-triangular plates. The edge of each plate is cut very regularly into six sharp teeth, which curve in one direction, and one other, curved so as to face these. The combs stand side by side, parallel to each other, along the whole length of the ribbon ; and there are muscular bands or fibres seen affixed to the smaller end of every plate, which doubtless give it independent motion. We have counted one hundred and thirty-six plates on one ribbon ; there are two ribbons on each thoracic segment, and there are seven such segments ; hence we may compute the total number of prehensile comb-like plates to be about one thousand nine hundred, each of which is wielded by muscles at the will of the animal ; while, as each plate carries seven teeth, there are between thirteen and fourteen thousand teeth hooked into the minute cavities and roughnesses of the interior surface of the cell, when the animal chooses to descend. No wonder, with so many muscles wielding so many grappling hooks, that the retreat is so rapidly effected !

The bundles of bristles which line the wart-like feet, are very extensively found in this class of animals ; and in some species they exhibit strange and singular forms, resembling the fantastic but formidable weapons of some semi-savage

people. Thus in a flat scaly worm (*Polynoe*), common enough under stones at the water's edge, the armoury consists of several sorts of weapons. First, there are long lances made like scythe-blades set on a staff, with a hook at the tip to capture the fleeing foe, and bring him within reach of the blade. Among them are others of similar shape, but with the edge cut into delicate slanting notches, which run along the sides of the blade, like those on the edge of our reaping-hooks. These are chiefly the weapons of the lower bundle; those of the upper are still more imposing. The outmost are short, curved clubs, armed with a row of shark's teeth to make them more fatal; these surround a cluster of spears, the long heads of which are furnished with a double row of the same appendages; and lengthened scimetars, the curved edges of which are cut into teeth like a saw. To add to the effect, imagine that all these weapons are forged out of the clearest glass instead of steel; that the larger bundles may contain about fifty, and the smaller half as many, each; that there are four bundles on every segment, and that the body is composed of twenty-five such segments; and you will have a tolerable idea of the garniture and armature of this little worm, that grubs about in the mud at low-water mark.

Some of the Worms, both of the sea, and of fresh-waters, manifest a singular power of self-multiplication. In one or two species of *Syllis*, and in some of the genus *Nais*, the last segment of the body increases in size, and becomes marked with segments, which grow more and more distinct; in time, a head begins to form at the anterior end, which is furnished with antennæ. At length this strangely-made animal breaks off from the parent, and enters upon an independent existence. The facts have been denied; but we can give the testimony of personal observation to their truth, having witnessed the process in both the genera above mentioned.

Many of the marine Worms are remarkable for gorgeousness of colouring; and not a few display opaline reflections and metallic changes of hue of great splendour. There is a species, by no means rare on our coasts, called the Sea-Mouse (*Aphrodite*), which rivals the humming-birds in the magnificence of its array. It is a curious animal in many respects. The form is unusual, being somewhat oval; a flattened, unshapely creature, about an inch and a half in breadth, and some three or four inches long, of a dusky brown hue, except at the sides, which are clothed with a dense coat of long, slender bristles. It is in these that the creature's glory resides. This clothing reflects the most glowing prismatic colours, crimson, scarlet, orange, yellow, green, blue, and purple, ever varying according to the angle at which the rays are reflected to the observer's eye. Thus are verified the lines so familiar to our infancy:

"Let me be dress'd fine as I will,
Flies, worms, and flowers, exceed me still."

In another allied species the side bristles exhibit a structure, which admirably adapts them for weapons of defence. The tip of each bristle is a barbed spear, being beset on two sides with numerous points directed backwards. As these bundles of spears are retractile, however, the tender flesh of the animal would be liable to laceration when they are withdrawn into the interior of the foot; but a beautiful provision is made to meet this emergency. Each of the barbed javelins is furnished with two membraneous blades, between which it is enclosed, in repose; these prevent the points from coming into contact with its own flesh, while they readily open, and offer no impediment to the extrusion of the weapon.

In the common Earth-worm (*Lumbricus*), the rings are very numerous, and each ring is furnished with eight retrac-

tile bristles, by means of which it traverses its long burrows. Mr. Charles Darwin has satisfactorily proved that earth-worms are most valuable agents in fertilising lands, especially in undisturbed pastures, gradually covering the surface with their casts, and thus forming a layer of finely pulverised earth of the richest character. A field which had been limed was examined after about eighty years, when the lime was found to be evenly covered, to the depth of thirteen inches, with this animal mould.*

The Leeches (*Hirudo*, &c.) are not provided with bristles for locomotion; but a compensation is given them in the form of a sucking disk at each extremity. They move, as is well known, by the alternate adhesion and detachment of each sucker. The Medicinal Leech (*H. medicinalis*) performs its useful office, under the concealment of one of these suckers; and hence its mode of action is not generally known. Its mouth is furnished with three small semi-oval tubercles arranged in a triangle, the upper edge of each tubercle being cut into minute but sharply serrate teeth. When a vacuum is made beneath the anterior sucker, these tubercles are brought into close contact with the skin of the patient: proper muscles then move them to and fro in a saw-like fashion, when the minute teeth presently cut through the skin and superficial vessels, and the blood flows profusely, under the atmospheric pressure, into the stomach of the Leech.

It is very remarkable that blood is not the natural food of the Leech; and that the fluid which it so greedily swallows does not pass into the intestine, but remains in the stomach for many months; and, what is still more curious, it does not coagulate during the whole of that time, as it would do in an hour if exposed to the air, but continues to retain its fluidity. Hence it has been not unreasonably

* Proceed. Geol. Soc. vol. ii.

concluded that this habit is rather a special provision ordained by the Divine mercy to render these creatures subservient to the alleviation of human suffering than necessary to supply the wants of the animals themselves.

We must not, however, suppose that the "convenience, health, or safety" of man is the only object of the creative wisdom of God. There are numberless provisions expressly made for the comfort and well-being of the inferior creatures themselves; and no creature is so mean, worthless, or humble, but it has been the object of His paternal care in multitudinous instances, a few of which only, doubtless, we are cognisant of. Two or three examples of benevolent foresight and curious contrivance have been mentioned in this paper, and the enumeration might be extended almost *ad libitum*; but these are sufficient to show that God cares not only for sparrows, but even for worms also.

What, then, shall we infer from hence? Shall we take up the infidel sentiment of the poet, so unjustly belauded,—

"He sees with *equal eye*, as God of all,
A hero perish or a sparrow fall;
Atoms and systems into ruin hurl'd,
And now a bubble burst, and now a world?"

Nay, rather, let our comfortable conclusion be, that which our Lord Jesus teaches us to draw from analogous examples: "If God therefore so clothe the grass of the field, which to-day is and to-morrow is cast into the oven, shall He not *much more* clothe you?" "Ye are of *more value* than many sparrows."

P. H. G.

ENGLISH LETTER-WRITERS.

HORACE WALPOLE.

NONCHALANCE and easy levity are not genuine Anglo-Saxon characteristics. The Englishman may sometimes trifle, but his genius is essentially grave and earnest. He acts as though success depends, in business, upon every word,—in law, on every brief,—in literature, on every book, and every review of every book,—in war, on every movement,—in love, on every look.

Even in his amusements he is solemn. As Froissart said of him long ago, he takes his pleasures sadly. Nothing can be graver than his dancing, and when he laughs we say truly that his features *relax*. He speaks ponderously about trifles, and when he jokes, or, as it is said, enjoys a joke, he is oftener proud than amused. He is good-humoured, and sometimes boisterously, sometimes serenely, merry; but he is hardly ever *gracefully* gay.

If this is a defect we must respect the cause of it. Our fellow-countryman is generally fully occupied. He is not happy when he is idle. His powers are then most vividly developed when he has plenty to do; when he is facing perils or encountering difficulties; trying to help others, or to advance himself. And he is sincere. There is an air of truth about him. He may be proud, but he is not vain. He walks erect. And if in his solemn port there are a certain stiffness and want of grace, it is evident that at least he is no hypocrite. He is not one to smile, and smile, and smile,—and be a villain. Perhaps he is even too impatient of the fashionable fine gentleman:—but the “carpet knight,” with his trim fopperies, and exquisite im-

pertinences, has excited ungovernable indignation in the bosom of the genuine Anglo-Saxon, as often as he has crossed his path, ever since the days of Harry Hotspur.

In our last paper we spoke of Cowper. That good, sad man was eminently true. Disease never spoiled that part of his character. He was morbid and self-tormented, but he was genuine and in earnest. We are now about to speak of one who was the very opposite.

HORACE WALPOLE'S character was made up of contradictions. He was witty and weak, ambitious and trivial. He had great abilities and unequalled opportunities. In that barren age he might, with his talents, have made himself a leading man in literature; he might, with his birth and position, have made himself a leading man in politics. [†]He did neither. He was satisfied to be a man of petty whims, instead of lofty pursuits,—an elegant idler, and an anti-quarian fop.

He was as vain as he was clever, and as changeable as he was vain. One day he pretended to hate kings; the next he wrote lovingly about Royal Authors. He inscribed under a copy of the death-warrant of Charles I. the words *Major Charta*,—and remembered with rapture that he had been presented to and kissed by George I. when ten years old. He courted fame, but made believe to shrink from popularity. He was an author, and, as such, most painfully correct; but he would not allow himself to be classed with men who sometimes wanted a coat to their backs. Hood might have drawn from life, and not from imagination, when he described a man who would not identify himself with the members of the Republic of letters,—because there was not a Sovereign among them! Truth herself would not have been admitted to Strawberry Hill unless she was costumed *à la mode*. He was vain by disposition, and cold by temperament. He was liberal in theory, and parsi-

monious in practice. He was serious about trifles ; a trifler about matters of importance. He was a vivid, ill-natured, and witty gossip ; a vacillating and insincere thinker ; a selfish friend, and a spiteful enemy. But, fickle and facing-both-ways as he was in regard to this world, he was unvarying in life and character in regard to the next. It shows how miserable was the state of his age, that he never thought it worth while even to pretend to be religious.

It is impossible to speak sympathetically of such a man, or such a time. But he stands high among our letter-writers. D'Israeli considered him to be unrivalled, and Sir Walter Scott said that he was the best letter-writer in the English language. We do not, of course, agree in these opinions ; Southey was far nearer the truth in assigning the highest place to William Cowper. But his sketches of his particular age and circle were certainly masterly, and his style was exquisite. The jewels may be paste, but their setting is faultless. He has, therefore, undoubted right to a pedestal here.

He was born on the 5th of October, 1717. When only nine years of age, he was sent to Eton school, where he had Gray, the poet, for his school-fellow. He was a delicate child ; but he escaped much of the brutality then in vogue at our public schools, on account of his father's position as first minister ; for toadies abounded then, as they do now. Perhaps Walpole's whole career might have been different, if his masters and playmates had not truckled to him, and fostered his inbred weaknesses. Whatever the cause, however, he was never a genuine boy. Cricket and games of agility and strength had no attractions for the youthful Horace.

In 1735 he went to King's College, Cambridge. Gray, who was of Pembroke, was still one of his associates ; so was another school-fellow, a cousin, Henry Conway, the only

man for whom he appears to have had a lasting friendship. The most obsequious biographer cannot make out that Walpole distinguished himself in any way at college; although this was, of course, no proof of lack of talent.

In 1739 he left Cambridge, and, together with Gray, started for "the grand tour."

At Florence he stayed with Mr. (afterwards Sir) Horace Mann, the English minister there. To this gentleman his best letters of after years were addressed. In 1741, shortly after leaving this place, he and Gray quarrelled, and parted company.

Horace's father, Sir Robert Walpole, had, in 1737, secured his son in sinecure offices, with salaries amounting in all to 2500*l.* per annum. On his return from his tour, Sir Robert put him into Parliament for a rotten borough; and he continued to sit in the House a silent member, or, at all events, an uninfluential one, for twenty-six years.

In 1741, however, Sir Robert Walpole was tottering. The history of the House of Commons at that time was the history of battles between place-hunters and place-men; the public good being of secondary importance. Sir Robert had held place for a great many years. His opponents were numerous; opportunity favoured them; they acted; and he fell. He was made Earl of Orford, with a good income. He almost retired from public life, and became a virtuoso. In 1743 Horace catalogued and described his pictures. A very short time afterwards he died, and Catherine of Russia purchased these pictures for 40,000*l.*, and had them carried to St. Petersburg, where they are now.

In the same year, 1743, Horace Walpole wrote warmly to Horace Mann in praise of a London life. He said that, if he were a physician, he would prescribe nothing but "recipe CCCLXV drachm. Londin." Yet, in 1747, after residing for some time in Windsor, he purchased a property at

Twickenham—then far from London ; and after many years labour and great alterations, “Chopped-straw Hall,” the country residence of a London toyshop keeper, was converted into the “Strawberry Hill” of which everybody has heard; and he lived there, with few exceptions, during the remainder of his life.

That “little plaything house” was full of little wonders. Among them was a printing-press; and the proprietor amused himself by bringing out lordly editions of favourite authors, as well as books of his own. Of the latter, the most voluminous was his “Royal and Noble Authors,” a work of little literary value, but which, from the attraction of its subject, excited a good deal of attention. In 1765 appeared his “Castle of Otranto;” but, in order to give to this little tale an air of secresy, he had it published by a more regular member of “the trade” than himself. It succeeded, and he owned the authorship. Like its successors, the “Old English Baron,” and hosts of others, this once celebrated “Gothic Story” of mystery and romance has had its day, and is little better known to the present generation than “Anne of Swansea,” or “The One-handed Monk.” Thanks to the reformation which was begun by Crabbe’s sarcasms, which was continued by Scott’s stories, and which is still progressing, modern readers of fiction are not to be satisfied with mere wonders or adventures. Writers of imaginative narratives are required to have insight into the secret springs of men’s actions and passions, to approximate as nearly to biography as their art will permit, to delineate character, as well as tell and develope interesting stories with skill. Walpole’s romance is, therefore, quite out of date now.

In 1766 he published his “Historic Doubts about Richard III.”—an attempt to overthrow the proofs of that sovereign’s guilt. In our own day a lady has endeavoured to do the same thing in a more positive way. But public

opinion is still on Shakspeare's side. We believe the man to have been hump-backed and a monster, in spite of Horace Walpole or Miss Halsted. Such Historic Doubts were the rage of the last century : nothing was safe from the doubter ; the most sacred and important matters as well as the most trivial were alike submitted to what was imagined to be reason, until Archbishop Whately published his extraordinary Historic Doubts about Napoleon Buonaparte, in which, jestingly but logically, he completely routed the whole tribe, from Walpole on Richard to Hume on Miracles.

Meanwhile he accumulated curiosity upon curiosity at his Gothic castle. He occupied himself in entertaining noble and courtly, and even royal, acquaintances ; in writing brilliant letters about the sayings and doings of fashionable wits and ladies : in *playing at life*, if we may so speak—a light, elegant, bitter, and heartless exquisite.

Thus nearly thirty years passed. He took occasional journeys to Paris and the country ; but most of his time was spent at Strawberry Hill, which, as new generations arose, was still one of the most successful show-places near London. By this time, however, his health was much broken. He had long been a victim to gout, and he was now an old man. The title of Lord Orford came too late to afford him any gratification ; and at length, in 1797, the querulous and veteran wit was summoned away from a world whence nearly all his old acquaintances had long since departed.

It seems to us, as we review it, to have been, at its best time, a poor and paltry career ; but there is a moral in it, as in every life, if we will read with understanding ; a moral, old as civilisation—that wealth, intelligence, and the applause of men, are all, if by themselves, incapable of giving happiness ; and that he only who tries to do what is righteous and great, looking upward, and looking onward, can attain pure joy—in that “peace which passeth understanding.”

The dozen octavos of Walpole's Letters form the largest repository of brilliant frivolity and glittering nonsense to be found in the English language. And although a dreary impression is left in the long run, owing to their utter worldliness and want of soul, there is a great momentary charm in their wit, and in their jaunty, easy sketches of all contemporary persons and things. Taken almost at random, the following, to the Countess of Ossory, will give some idea of the Horatian method:—

“*Berkeley Square, Nov. 14, 1779.*”

“I must be equitable; I must do the world justice; there are really some hopes of its amendment; I have not heard one lie these four days; but then, indeed, I have heard nothing. Well, then, why do you write? Stay, Madam, my letter has not got on horseback yet; nor shall it mount till it has something to carry. It is my duty, as your gazetteer, to furnish you with news, true or false; and you would certainly dismiss me, if I did not, at least, tell you something that was impossible. The whole nation is content with hearing anything new, be it ever so bad. Tell the first man you meet that Ireland has revolted; away he runs, and tells everybody he meets,—everybody tells everybody, and the next morning they ask for more news. Well, Jamaica is taken. Oh! Jamaica is taken! Next day, What news? Why, Paul Jones is landed in Rutlandshire, and has carried off the Duchess of Devonshire, and a squadron is fitting out to prevent it; and I am to have a pension for having given the earliest intelligence; and there is to be a new farce, called ‘The Rutlandshire Invasion;’ and the King and Queen will come to town to see it, and the Prince of Wales will not, because he is not old enough to understand pantomimes.

“Well, Madam, having despatched the nation and its serious affairs, one may chat over private matters. I have seen Lord Macartney, and do affirm that he has shrunk, and has a *souppçon* of black that was not wont to reside in his complexion.

“Mr. Beauclerc has built a library in Great Russell Street, that reaches half-way to Highgate. Everybody goes to see it; it has put the Museum's nose quite out of joint.

“Now I return to politics. Sir Ralph Payne and Dr. Johnson are answering General Burgoyne, and they say the words are to be so long, that the reply must be printed in a pamphlet as large as an atlas, but in an Elzevir type, or the first sentence would fill twenty pages in octavo.

"You may depend upon the truth of this, for Mr. Cumberland told it in confidence to one with whom he is not at all acquainted, who told it to one whom I never saw; so you see, Madam, there is no questioning the authority.

"I will not answer so positively for what I am going to tell you, as I had it only from the person himself. The Duke of Gloucester was at Bath, with the Margrave of Anspach. Lord Nugent came up and would talk to the Duke, and then asked if he might take the liberty of inviting His Royal Highness to dinner? I think you will admire the quickness and propriety of the answer:—the Duke replied, 'My Lord, I make no acquaintance but in London,' where you know, Madam, he only has levees."

The next gives a glimpse of *Vanity Fair* eighty years ago:—

"Besides the gout for six months, which makes some flaws in the bloom of elderly Arcadians, I have been so far from keeping sleep for the last ten days, that I have kept nothing but bad hours. I have been at four balls since yesterday se'nnight, though I had the prudence not to stay supper at Lord Stanley's. That festival was very expensive, for it is the fashion now to make romances rather than balls. In the hall was a band of French horns and clarionets in faced uniforms and feathers. The dome of the staircase was beautifully illuminated with coloured glass lanterns; in the ante-room was a bevy of vestals in white habits, making tea; in the next, a drapery of sarcenet, that with a very funereal air crossed the chimney, and depended in vast festoons over the sconces. The third chamber's doors were heightened with candles in gilt vases, and the ballroom was formed into an oval with benches above each other, not unlike pews, and covered with red serge, above which were arbours of flowers, red and green pilasters, more sarcenet, and Lord March's glasses, which he had lent, as an upholsterer asked Lord Stanley 300*l.* for the loan of some. He had burst open the side of the wall to build an orchestra, with a pendent mirror to reflect the dancers, and the musicians were in scarlet robes, like the candle-snuffers who represent the Senates of Venice at Drury Lane. . . . The former quadrilles then came again upon the stage, and Harry Conway was so astonished at the agility of Mrs. Hobart's bulk, that he said he was sure she must be hollow."

Amidst all his levity Walpole was thoroughly unhappy, as every man must be, who has faith in nothing. He says,—

"I desire to die when I have nobody left to laugh with me. I have never yet seen or heard anything serious that was not ridiculous. Jesuits, Methodists, philosophers, politicians, the hypocrite Rousseau, the scoffer Voltaire, the Encyclopædists, the Humes, the Lyttletons, the Granvilles, the atheistic tyrant of Prussia, the mountebank of history, Mr. Pitt"—senior—"all are to me but impostors in their various ways. Fame or interest is their object; and after all their parade, I think a ploughman who sows, reads his almanack, and believes the stars but so many farthing candles created to prevent his falling into a ditch as he goes home at night, a wiser and more rational being, and, I am sure, an honeater, than any of them.* . . . Rabelais brightens up to me as I see more of the world. He treated it as it deserved, laughed at it all, and, as I judge from myself, ceased to hate it, for I find hatred an unjust preference."

Receiving the Scriptural account of human depravity, the Christian is still benevolent; rejecting that account, the free-thinker is usually a misanthropist. And with no affection for his fellows, and no hope in his future, few things can be drearier than the old age of the used-up worldling. To the foregoing extract the next may be given as an appropriate sequel:—

"I am tired of the world, its politics, its pleasures, and its pursuits; but it will cost me some struggle to be tender and careful. Can I ever stoop to the regimen of old age? I do not wish to dress up a withered person, nor drag it about to public places; but to sit in one's room, clothed warmly, expecting visits from folks I don't wish to see, and tended and flattered by relations impatient for one's death! let the gout do its worst as expeditiously as it can. . . . I am not made to bear a course of nonsense and advice, but must play the fool in my own way to the last, alone with my own heart, if I cannot be with the very few I wish to see; but to depend for comfort on others, who would be no comfort to me, this surely is not a state to be preferred to death; and nobody can have truly enjoyed the advantages of youth, health, and spirits, who is content to exist without the two last, which alone bear any resemblance to the first."

C. M. C.

* Walpole and Cowper could not be more justly contrasted than in placing side by side the above passage, and Cowper's parallel of the pious knitter and Voltaire.

MY BROTHER'S KEEPER.

CHAPTER XIII.

With thy clear keen joyance
Languor cannot be :
Shadow of annoyance
Never came near thee.—SHELLY.

It was one of those warm foretokens of summer which are sometimes sent by the hand of April. With sympathetic laziness people strolled along through the sunshine ; the street-sprinklers passed on with their carts, and birds and radish-boys were clamorous. The leaves came out apace but stealthily, and the very air was breathless. And yet there floated in from the storehouses of fresh things, fresh influences. The silence spoke of sweet sounds in the wilderness of nature, to the wilderness of men ; and flowers came not on 'the wings of the wind,' but their own breath ; and over all there was a sky so purely blue—so free from turmoil and pollution,—that it seemed as if the last revolution of the earth had rolled New York away from its own proper atmosphere, and bestowed it beneath a new canopy. How far removed from the sights and sounds—the steps, the rattling wheels, the drums, the cries, that spread themselves through the city.

So thought Miss Clyde, as with little Hulda in her hand she went slowly home from a walk. How few, she thought, how very few there were that appreciated or even noticed that 'clear expanse',—how few that would not mourn if the word were sent to them, 'Come up hither.' The very birds were longing to try their wings in such an element ; and man chose the dust, and looked down and not

up. A little pressure of her hand brought her eyes down. Hulda was studying her face as intently as she had watched the sky.

‘Are you tired, love?’

‘O no,’ said Hulda, ‘but I didn’t know what you were thinking of. There’s a carriage at our door.’

Somewhat wondering with herself what could have made Mrs. Raynor go in and wait for her, Rosalie mounted the steps, and her wonder was not lessened to find Thornton in the parlour.

The good quakeress spoke not a word till she had kissed her first upon one cheek and then on the other, even more tenderly than usual.

‘I have made acquaintance with thy brother,’ she said then—‘I would know everybody that loves thee and whom thou dost love.’

‘That is not a very safe rule to go by neither,’ said Thornton. ‘In this case, Mrs. Raynor, Rosalie loves somebody very different from herself.’

Mrs. Raynor looked as if she knew it full well—or at least as if she thought the people who resembled Rosalie were few.

‘And thou, dear little Hulda,’ she said, sitting down and taking the child on her lap—‘wilt thou come home with me and see my flowers?’

Hulda looked doubtfully towards her sister and then up at the soft, quiet eyes that looked down upon her. She had to resort to the childish formula of hesitation,

‘I don’t know, ma’am.’

‘Yes, thou wilt come,’ said the quakeress decisively—‘thy sister will not say nay to thy going. Thou and I will have the carriage all to ourselves, and we will get home before dinner.’

‘But how shall I get back again?’ said Hulda smiling.

'We will see—mayhap thy friend Henry Raynor will bring thee.'

'Is that the same Mr. Raynor that came here once—no, two times?' said Hulda.

'Truly love I think there is but one Henry Raynor,' said his mother.

'O then I should like to go, very much.'

And jumping down to ask her sister's leave, Hulda ran away up-stairs.

'He hath taken a strange fancy to thy little pet,' said the quakeress, looking however rather towards Thornton.

'To Rosalie's pet, Mrs. Raynor—I am fonder of grown-up humanity.'

'Thou hast never known what it was to lose such a little pure spirit from thy house,' said the quakeress with a sigh, 'or thee would better appreciate it. But thou hast a large share, friend Thornton, and 'when the cup runneth over,' the drops are less precious.'

'I have not a drop too many,' said Thornton with an expression he was hardly conscious of. 'You know it takes more to make some people happy than others, Mrs. Raynor.'

'I know there is but one thing which of itself bringeth happiness,' she said—'perhaps without that thy remark may be just. But here cometh one whose happiness is of easy growth. And yet, Rosalie, she demurreth about leaving thee even for one day.'

There was certainly considerable doubt on Hulda's mind except when she looked at Mrs. Raynor; but there she found something so attractive that she was allured on, and soon found herself doing anything else but fill a place in the carriage. Stowed away like a small parcel on the spacious seat, her little shoes in plain sight, with one hand stretched over Mrs. Raynor's soft dress and there held fast, Hulda

watched through the front window the substantial back of Caleb Williams, and thought how very funny it was for a coachman to wear a grey coat. The carriage rolled smoothly on in the most regular and matter-of-fact way possible,—as if Caleb and his horses had made an arrangement that they were not to get home before a certain time, and therefore it was as well to take it easy.

Hulda remembered how Thornton's horses went now very fast and now slow—and then started off again at a most eccentric pace; but at this rate she could have slept all the way to Mrs. Raynor's with no disturbance. Arrived at the house another wonder awaited Hulda, for there was a footman all in grey too; and when she had followed Mrs. Raynor up-stairs, and Rachel came at her mistress's call habited after the same sober fashion, Hulda began to feel as if all the world were turning mouse-colour, and looked down at her crimson merino with feelings of amazement.

'Thee sees I have brought home little Hulda Clyde, Rachel,' said Mrs. Raynor. 'Will thee take off the child's bonnet and cloak, and see if perchance her feet be cold.'

'Yea, verily,' said Rachel, when she had brought her mistress another dress. 'Art thou cold, Hulda?'

'O no,' said Hulda, whose mind had got beyond the cold region and was in a great puzzle, for Rachel had not only Mrs. Raynor's stuff gown but also her cap! 'I'm not cold at all.'

'Doth thy dress keep thee warm?' said Rachel with a grave irony which Hulda did not understand.

'Yes ma'am,' she said, in a new difficulty from the similarity of neckerchiefs—'I suppose so—my frock and my coat.'

Rachel almost smiled at the grave little face—so sincere and so wide awake.

'Now thou art all ready,' said Mrs. Raynor approaching them, 'and likewise I, and we will go down stairs.'

'There waiteth a woman this long time,' said Rachel, 'and she will not tell her want save to thee. James Hoxton hath brought her to the kitchen.'

'I will straightway go and see her,' said Mrs. Raynor. 'And for thee, little Hulda, wilt thou sit by thyself in the library until I come, and Rachel shall bring thee the cat?'

It never would have occurred to Hulda that a tortoiseshell cat could come to keep her bright dress company; and therefore when a grave knight of Malta walked in, she felt at once that he was one of the family.

'Art thou afraid to stay here alone?' said Rachel, when she had watched the knight's reception.

'Why what should I be afraid of?' said Hulda.

'Truly little one, thee has reason,' said the handmaid as she departed.

Hulda had sat some time upon the rug in front of the fire, and Maltese was quite expanding beneath her caresses; when somebody came in and took a chair behind her, and she was lifted up, cat and all, upon Mr. Raynor's lap. *He* was not in grey—Hulda saw that at a glance—but in a blue uniform with red facings, very much like her dress. She felt quite comforted. But when she got a fair view of his face—for at first it was too close to her own—she saw that he had his share of the sober colour, only worn differently. But what made him look so at her? There was something in his face that troubled her, and almost tearfully her eyes sought his. He smiled then, and drawing her head down till it rested against him, he asked how she was, and then after her sister.

'O she's very well,' said Hulda stroking the cat. 'I

suppose she's always well for she never says she's sick. Do you think she'll miss me to-day, Mr. Raynor ?'

'I do not believe she is sorry you came, dear Hulda, and I am very glad.'

Hulda thought that was very strange.

'Henry Raynor,' said his mother as she came into the room, 'go I pray thee and take off those trappings at once, my child ; I like them not—they become no man—much less thee.'

'Then you must get down, little Hulda, for a while, if I am to go and change my dress.'

It was a great pity, Hulda thought, with an uncomfortable vision of her friend habited in the prevailing colour.

But when he came down again the dress was black and not grey ; and Hulda went to her former seat with great satisfaction.

'The dinner waiteth,' said James Hoxton opening the door.

'You don't think yourself too old to be carried, Hulda ?' said her friend.

'O no,' said Hulda, 'Alie very often carries me upstairs when I'm tired or sick.'

'I should think thy weight better suited to thy brother's arms than to thy sister's,' said Mrs. Raynor, 'as having more strength.'

'O her arms are *very* strong !' said Hulda from her place of elevation. 'They *never* get tired. And Thornton's not at home you know generally when I want to be carried—but Rosalie always is. She says gentlemen can't always be at home so much as ladies. But she don't hold me quite as well as you do, Mr. Raynor.'

And with one arm passed most confidently round his neck, they went forth together and proceeded to the dinner-table ; where Hulda was as well taken care of as possible.

Taken care of in more ways than one, though she was too young and unskilled to notice the delicate tact with which whenever her childish talk ran too close upon home affairs she was led off to another subject ; nor how carefully she was kept, as far as might be, from making disclosures which indeed she knew not were such. And if she had been older she would have wondered at herself for her perfect at-home feeling among such grave people ;—for the freedom with which she talked, her little voice making music such as it never yields when the chords have been once overstrained or the wires unstrung—most like a mountain rill in its sweet erratic course. And the older ones looked and listened—Mrs. Raynor with often a smile and sometimes with glistening eyes ; while to his face the smile came less often, and there was only the look of interest and affection which won Hulda's heart yet more. And whenever the rill went too far in any one direction, it was only necessary to hold out a painted leaf—some bright word or question or anecdote—and the rill was tempted, and went that way. On the whole Hulda thought as she was carried back into the library, it had been one of the most satisfactory dinners she ever remembered.

'Hulda Clyde,' said Mrs. Raynor, 'I go up-stairs to sleep, as is my wont. What wilt thou do, my child ?'

'O I will stay here,' said Hulda.

'You can content yourself for awhile with the cat and me, I am sure,' said Mr. Raynor.

'O yes—and without the cat,' said Hulda contentedly.

He smiled, and his mother came up behind him, and passing her arm round his neck as if he had been a child, raised up his face and kissed it, and went away.

'What do you think of my being made a baby of yet, Hulda ?'

'Thornton says that's what mamma used to do with

Rosalie,' said Hulda, whose little avenues of thought all ran down to the same stronghold of love and confidence. 'Did you ever see my mamma, Mr. Raynor?'

'Yes, dear, often; and loved her very much.'

'I don't remember her a great deal,' said Hulda—'I believe I get her confused with Rosalie.'

She sat quiet a few minutes and then started up.

'Don't *you* want to go to sleep, Mr. Raynor?'

'Don't you?'

'O no—not a bit.'

'Neither do I.'

'Well that'll be very fair, then,' said Hulda laughing.

'But I should think you'd get tired of holding me, Mr. Raynor—most people don't like to.'

'I once had such a little sister as you are, Hulda—whom I loved better than almost anything else in the world. You remind me of her very much, and that is one reason why I like to hold you and kiss you and carry you, and do anything else with you and for you.'

'I'm very glad!' said Hulda, her pleasure half checked by something in his look and tone. 'So that's one reason. What's the other?'

He smiled and told her she must be content with hearing one; and then asked her what she had been doing and learning lately.

'I don't learn a great deal,' said Hulda—'only arithmetic and geography and little, little bits of French lessons. And then I write—and I have one hymn to learn a week, and a little verse every day.'

'Tell me one of your hymns.'

'Then I will tell you the last one,' said Hulda.

'Around the throne of God in heaven,
Thousands of children stand;
Children whose sins are all forgiven,
A holy, happy band—
Singing glory, glory, glory.'

'What brought them to that world above—
That heaven so bright and fair—
Where all is peace and joy and love?—
How came those children there,
Singing glory, glory, glory?

'Because the Saviour shed His blood
To wash away their sin;
Bathed in that pure and precious flood,
Behold them white and clean—
Singing glory, glory, glory.

'On earth they sought their Saviour's grace,
On earth they loved His name;
So now they see His blessed face,
And stand before the Lamb—
Singing glory, glory, glory.'

'Don't you think it's pretty?' said Hulda, when she had waited what she thought a reasonable time for Mr. Raynor to speak, and he had only drawn his arm closer about her.

'I think it is much more than pretty. Do you understand it all?'

'I believe so'—said Hulda—'Rosalie told me a great deal about it.'

'What?'

'Why she said that even children needed to be forgiven before they went to heaven—that was one thing in the first verse,—and that people ought to try to make this world as much like heaven as they could, and that if all was peace and joy and love there it ought to be here. And then in the third verse, that we didn't only need to be forgiven, but made good and to love all good things, and that if God didn't make us love Him and like to serve Him, we never could be happy in heaven even if we could get there. And she said the blood of Christ was called a flood because it was enough to save everybody in the whole world—and to make them clean, if they would only trust in it. And she said

the last verse taught us that we must love and serve Him now, while we are here, and then when we die He would 'receive us to Himself?'

'And what does that word 'white' mean in the third verse—'Behold them white and clean?'

'Don't it mean something like clean?' said Hulda.

'Something like, yes. It shows how very pure, how very holy, will all God's children be when He has taken them to heaven. As the Bible says—"they are without spot before the throne of God"—"without fault before Him"—think how very holy one must be in whom the pure eye of God sees neither spot nor fault. Such are all the children about His throne—and because thus holy they are happy.'

'Do you think there is *nobody* that is quite good?' said Hulda with a face of very grave reflection.

'The Bible says, "there is not a just man upon earth that doeth good and sinneth not."'

'I know it does,' said Hulda, who was apparently a little troubled with some reservation in her mind. 'But that only speaks of men. I don't suppose there are a great many.'

Mrs. Raynor came down from her nap in due time, and then proposed that they should go into the greenhouse. Hulda was enchanted; and ran about and admired and asked questions to the delight of both her friends.

'Would thee like some flowers to take home with thee?' said the good quakeress, drawing Hulda's head close to her. And Mr. Raynor's knife hardly waited the reply before it began its work. Hulda's little hands had as many as they could hold.

'And now thee must have one flower for thy sister—yea, Henry, thou art always right,' she said as her son began to examine the respective merits of the white camellias. 'They are not the fairer.'

'O Mr. Raynor! you are cutting the very prettiest one!' cried Hulda. 'O it was too bad to take that.'

'Is it too pretty for your sister?'

'O I don't think so, of course,' said Hulda,—'but then it was your little bush.'

Hulda wondered at the smile that passed over his face, and looked if she might see it come again, but it came not.

He tied up her flowers and put them in water for her, and walked with her about the greenhouse till the last sunbeams had left it, and the flowers grew indistinct.

'Friend Henry,' said James Hoxton appearing at this juncture, 'thy mother waiteth for thee at tea.'

'James Hoxton is a quaker,' said Mr. Raynor with a smile at Hulda's look.

'Does *that* make him speak to you so?' said Hulda. 'You're not a quaker, Mr. Raynor?'

'No. If I were a quaker, Hulda, I should call my mother 'friend Joan.'

'Should you! But that would be very disrespectful,' said Hulda.

'No — not if I were a quaker.'

'O —' said Hulda, a little and only a little enlightened. 'I'm *very* glad you're not a quaker — I don't like grey at all;' though when she got to the tea-table Hulda could not help liking everything about Mrs. Raynor — even her grey dress.

Mr. Raynor took her home in the carriage after tea. Not sitting by his side but on his lap, and wrapped up in his arms as if she were a precious little thing that he was afraid to lose sight of. But he would not come in, though Hulda begged and entreated him. He carried her and her flowers up the steps and into the hall where Tom stood holding the door; and then ran down again and in a moment was in the carriage and off.

(*To be continued.*)

TIMES OF REFRESHING.

THE world's day of refreshing has not yet come. It is promised; and it shall, in due time, arrive; but meanwhile creation groans; and though the many fields of earth have been looking up wistfully for the shower, they have not yet received it. They may have to become yet more parched and weary, ere they are refreshed. The world may have yet to pass through Elijah's years of drought ere it is gladdened with Elijah's "abundance of rain."

"So shall the world go on:

To good malignant, to bad men benign;
Under her own weight groaning; till the day
Appears of RESPIRATION to the just
And vengeance to the wicked, at return
Of Him so lately promised to thy aid,
The woman's seed, obscurely then foretold,
Now amplier known, thy Saviour and thy Lord;
Last in the clouds, from heaven to be revealed
In glory of the Father, to dissolve
Satan with his perverted world; then raise
From the conflagrant mass, purged and refined
New heavens, new earth, ages of endless date
Founded in righteousness, and peace, and love;
To bring forth fruits, joy, and eternal bliss."*

The "times of refreshing" are still in reserve. The world remains parched and unwatered. The desert has not yet blossomed as the rose.

Still there have been showers, and many a thirsty spot has freshened and rejoiced as the drops descended. There have been earnestings of what is coming; and, from the age of

* "Paradise Lost," b. xii. l. 537-551. In the above passage Milton has, with his usual felicitous exactness, caught up the original word *ἀναψυχῆς*—respiration—refreshing—breathing-time.

the Apostles downward, these showers have succeeded each other, time after time, so that there has been no generation in which some drops at least have not fallen.

The first great shower was Pentecost. On the anniversary of the giving of the law from Sinai, when "the heavens dropped (or "shook out rain," see the margin) at the presence of God," and the plentiful rain was sent upon the weary camp (Ps. lxxviii. 8, 9); on that day the Holy Spirit came down in power, and three thousand souls were gathered in. Such was the result of the Spirit's first testimony to the accepted propitiation of the Incarnate Son of God. Such was the response given from the Father's throne to the "It is finished" of the victim upon the cross. Christ was glorified; and, therefore, this earnest of what is yet to be seen over earth, in the day of His final glory, was sent down. Great, indeed, must have been the refreshing in Jerusalem, when that marvellous shower fell upon a soil that seemed cursed with barrenness and thirst. Three thousand in one city and in one day giving up their unbelief and owning as God the very being whom, a few weeks before, they had crucified as worse than the worst felon in their common gaol!

Once and again did the shower come down upon that same city and with like wonderful results. Many were the thousands in Jerusalem that listened to the life-giving news, and gathered round the name of Jesus of Nazareth. The cloud from whose skirts there came, ever and anon, those mighty showers, did not soon evaporate or depart, but rested long above the city, exhibiting many times its heavenly treasures and shedding down during the space of forty years, the reviving rain with which it was charged.

But all Judea was to know the power of that name, which had brought life to so many thousands in Jerusalem. Right above Samaria did the cloud plant itself, and that region was

watered from on high, so that there was great joy throughout it (Acts, viii. 8). In other parts it was the same; till over the face of that barren land many a green spot was seen, many a field of corn waved to the breeze, and many a palm-tree rose up in stately beauty. The word of the Lord "grew and multiplied." The name of Jesus of Nazareth was felt to be a name of power,—truly the name of Him who is the resurrection and the life.

We pass north into Asia Minor, and we find that the cloud has been there. At first, as it rested over Palestine, it seemed no bigger than a man's hand; now it has spread itself out over the lands of the Gentiles, till city after city is refreshed by it,—Ephesus, Pergamos, Laodicea, Philadelphia, Smyrna, Sardis, Troas, Derbe, Miletus, Antioch. Strange must have been the scenes in these Gentile cities,—far stranger than those in Galilee, or Judea, or Samaria. For what idea could these idolaters have of the One God, or of His Christ, or of the Holy Ghost? Yet the name of the crucified Jesus, simply spoken by solitary men, with no power, nor numbers, nor philosophy to back them, wrought like a miraculous spell; so that men, by some mysterious impulse, clung to it, and for it forsook their idols, and burned their books of magic, and left the temples of Diana and Jupiter, to meet together in some small room where, perhaps, their household gods had stood, or where but yesterday, it might be, they had chaunted, over their cups, some drunken song to Venus or to Bacchus.

We cross the Hellespont and pass into Macedonia, and from Macedonia southwards into Greece. The cloud has been there before us. And what a change it has made! Athens, indeed, has got but little. Hardened into iron by its vaunted wisdom, the soil has flung off the drops as they fell. But few listen to the announcement of resurrection and judgment,—Dionysius the Areopagite, a woman named

Damaris, and one or two besides. There can hardly be a Church at Athens, save the gathered "two or three." At Corinth, however, it is not so; and the Gospel triumphs more widely over Corinthian sensuality than over Attic philosophy. In Philippi, too, and Thessalonica, and the region of Macedonia, we light upon spot after spot of brightest green. The shower has done its work. The hills of Greece look greener, and the vale of Tempe seems fairer, than when Ovid sung of it as the haunt of "gods."

We pass westward, and find ourselves in Italy. But the cloud has been before us. The shower has come down upon its valleys, and the roses of the "double-bearing Pæstum"* have been far outshone by the ever-blooming Rose of Sharon. Rome, the metropolis of the world, has listened to the good news of life through Him whom Pilate crucified; and multitudes have left their vanities, and found the living God. What wonders are now spoken of in Rome! Never, in all the long, strange history of that city, has the Capitol, or the Forum, or the Campus Martius, seen the like. The tidings have gone abroad among the citizens, "Jesus the Jew, whom our procurator condemned, and to whose death the emperor assented, has come alive again, and He is the Son of God; nay, and whoever will own Him as such shall receive an everlasting kingdom, and a paradise more blessed than the Elysian fields." Many scoff, many doubt, many give no heed; but some listen. They listen, and what a change seems to pass upon them as they drink in the wondrous words, "Jesus Christ died for our sins,—He died and rose again." They are lifted up into a new region; old things pass away, all things have become new. As they pass through the market-place, or out of the city along the Appian Way, they speak to those they meet with of the joy which fills them. As they

* "Biferique rosaria Pæsti."—VIRGIL, *Georg.*

wander down the banks of the Tiber they speak to themselves of Him whom they have found, and ask, "Is all this really true, and is there no condemnation to them that are in Christ Jesus?"

We cross the Alps, and traverse Gaul. The shower has been there. We cross the Pyrenees, and glance over Spain. The shower has been there. We take ship and visit the islands of the Mediterranean. The shower has been there. And as we lie at anchor at Malta or at Crete, a merchant-vessel bound for one of the Lycian harbours anchors beside us. She has just returned from a far northern voyage, and her freight is tin from the mines of the Cassiterides. There are some Asian brethren among the sailors, and the first news they bring us is that Christ has been preached to these far-off islanders. Britain has received the shower!

North, south, east, west,—all regions have something to tell us of the heavenly rain. Over the whole vast desert of heathenism, whose sands are twice dry, and whose best soil seems incapable of yielding aught save the rank weeds of foul idolatry,—over this whole desert flowers are springing up in clusters: the very crevices of the northern rocks have now their roses. Heathenism looks on amazed. From every quarter the mysterious fragrance seems to come. Borne upon every breeze it floats across seas and mountains, resting over every city, and finding its way into every temple, till the incense of "the gods" is lost amid the sweeter odours flowing out of no human censer and no earthly garden.

Whence came the fragrance that made men wonder? Heathenism asked the question, but was slow to receive the answer.

Such was the way in which the parched world was refreshed. The showers were partial, but still they moved

over a vast stretch of territory,—perhaps much vaster than is commonly thought. The showers were brief, but while they lasted they wrought wonders; and the verdure which they called up from the sands of these Gentile deserts was of the greenest and healthiest kind.

The book of the Acts of the Apostles is a far more wonderful record than we generally conceive it to be. Were it the annals of the creation of the stars it would be much less wonderful than it is; for what is the creation or lighting up of the brightest orb in the heavens to the new creation of the poorest outcast wandering through some remote village of Parthia, or living by theft in some lane of Corinth? The great folios of Moreri, or Bayle, or Kippis, which record all that is worth knowing of the great and wise of earth, contain unspeakably less of what will last than the twenty-eight chapters of Luke's marvellous story of the Church's early days. It is the shortest, simplest, plainest history of a great era that was ever written; yet it is by far the richest, most fruitful, and most suggestive,—inexhaustible in its teachings, and speaking as directly to the age that is now, as to the age that first read its pages.

It needs, no doubt, many readings. But from every new search we return laden with fresh gems. The mere critic soon exhausts it. The historian of the world easily gleans from it all the information he wants. He sees at one or two readings all that *he can see*. It needs faith's microscope to get farther in. And when thus *magnified*—not coloured nor distorted, but simply *magnified*—by faith's microscopic power, what treasures, what wonders disclose themselves!

Take up a few of those verses in which the results of a preached gospel are given us. At first they seem bare, as does the bud of spring. But examine them, open them out, magnify their parts,—how full they become, how endless their riches! The first of these that we light upon is the

following:—"The same day there were added unto them about three thousand souls," (ii. 41). Is this less wonderful, less sublime than the magnificence of the oft-praised verse, "And He made the stars also?" Does the former not suggest as much as the latter—both at the same time being so divinely brief and unadorned? Or we light upon this verse, "The Lord added to the church daily such as should be saved;" or, "The hand of the Lord was with them, and a great number believed and turned unto the Lord." Does not this call to mind the well-known verse, which even Gentile criticism has numbered with the sublime, "God said, Let there be light, and there was light?" The miracles of the old creation, though greater to the eye of science, are small when compared with the miracles of the new creation. The Pentecost of the first creation, when "The Spirit of God moved upon the face of the waters," was the ushering in of miracles which made the morning-stars sing together, and the sons of God shout for joy. But the Pentecost of the second creation, when the Holy Spirit came down in such overwhelming power, was the introduction to days and years of miracle such as caused joy in heaven, in the presence of the angels, such as had never been known there before.

In reading the records of these early days of refreshing, one feels how directly that refreshing came from God Himself. "The hand of the Lord was with them," is the only explanation given of the mighty success of these primitive evangelists. The work was of God, not of man. Hence there was a vitality, a reality, and a completeness about it, which contrasts strongly with what has been done in other ages. Man soon began to play his part,—to imitate the divine workmanship. And what did he produce? A stiff copy,—a picture, a statue; *but not a Christian*. He pro-

duced what has been called a "religious man," but not what God calls a "saint,"—one who is "made partaker of the divine nature." His best is but a skilful daguerreotype ; complexion, motion, life, spirit, are wanting.

Once and again has man forgotten this. He must try his hand at doing the work of God ! He thinks he can make men Christians as he can make them astronomers or geologists. By overstepping his own limits and intruding into God's circle, he has done grievous and lasting harm. He has, indeed, multiplied names and swelled the roll of Christianity till it includes nations and kingdoms without number. But he has not made these names to LIVE. Yet he has too often succeeded in deluding men into the belief that they were alive when they were dead. Man's clumsy attempts at imitating the work of God have been the source of most of the corruptions by which Christianity has been disfigured, and the name of Christ dishonoured. How wide the difference between man's work and God's work ; between a Christian of man's making and a Christian of God's making ! Age after age has the Church lost sight of this. She has claimed to herself the power and prerogative of making Christians ; and by means of sacramental grace, officially administered or withheld, she has asserted her right of making or refusing to make Christians, at her pleasure ; thus taking out of the Holy Spirit's hands a work which is so exclusively and inalienably his own. Man-made Christians, Church-made Christians, baptism-made Christians, may do for an *official* religion, in which the sinner does not need to transact *personally* with God, nor to taste an ascertained forgiveness, nor to enjoy the flow of un-intercepted love ; but in what aspect or feature do such Christians bear the very farthest-off resemblance to the saints of primitive days, of whom it may be truly said that what they

had was just what these others have not, and what they had not was just what these others glory in possessing, nay, count vital in any claim to the name of Christian.

The Church's claim to make Christians has but multiplied the forms and shapes of death, while it has ripened apostasy and prepared a soil for infidelity. Pentecost was set aside, or only referred to as the installation of the Church in her official dignities and powers. Christ was dishonoured. The Spirit was quenched. The Church took possession of the keys of heaven and hell. She shook them in the face of the Most High.

God's way of working in these early times of refreshing was very simple. The gospel of His grace was the instrument. He sent abroad His messengers to tell the story of Him who died and rose again. The various scenes recorded in the Acts are just the results of the simple telling of this story, by men who had nothing to add in the way of embellishment or argument, save that all which they had spoken was most thoroughly *TRUE*. They asked men to believe it because God had spoken it; and because they could show them how altogether *true* it was, by means of the plain facts of which they were eye-witnesses. Wrapped up in these facts lay the whole gospel; and that these facts were true they affirmed constantly, as men who knew them, and who were ready to give their lives in addition to their testimony.

Men, through the power of the Spirit, listened and believed. In believing they were filled with joy. The love which these facts embodied came in and occupied their souls. How could they but be glad?

H. B.

A SUNDAY IN WURTEMBERG.

WURTEMBERG has produced its men eminent in the annals of literature and philosophy. With a Kepler to represent science; a Dannecker to illustrate the arts; a Schelling and a Hegel amongst philosophers; a Schiller and Wieland, chiefs in German literature and unitedly the head of whatever is original or most characteristic in German poetry; and with an Uhland and a Knapp, still to perpetuate in sweet strains the utterances of the German muse, the genius of its sons has raised it to no mean position in the world of mind. But to the Christian eye a still brighter lustre is presented by its heavenly ornaments. Of those "whose names are written in the Book of Life," known and unknown to earthly fame, it has possessed a numerous seed. It furnished a retreat in days of persecution to some bands of the Waldenses. Participating in the general movement at the period of the Reformation, the principles of Protestantism struck a deep root in that soil; and at the present time it is the only country in Southern Germany where the great majority of the inhabitants belong to the Evangelical Church. The entire population of the country is less than that of our one city, London: yet it has furnished many writers of eminence and real worth in German theology; it has provided the Church at home and abroad with many of its best preachers, and at the present day contributes not only largely in pecuniary means to the cause of Foreign Missions, but furnishes also still more valuable contingent of *men*; so that the and even our own Missionary Society has been enabled to send a large measure to Würtemberg for the most important instances,—the late lamented W their most devoted labourers.

If piety be thus widely diffused in its influence in Würtemberg, it is no less cheerful and winning in its character. It wears a warm and kindly aspect. There is much of the feeling of Christian brotherhood amongst all classes: and the stranger who can enter into this Gospel fellowship, be he of what nation he may, has already the freedom of every Christian society in the land, and is in possession of a passport which will obtain him admittance to the innermost circle of Christian life throughout the country.

It was partly with a view to know this better for ourselves, and still more in consequence of it, that we were led, in the autumn of 1854, to spend a week in Würtemberg. We had been taking part in the great meeting of the *Kirchentag*, in other words, the Diet or free Convention of the German Churches at Frankfort, and gladly accepted an invitation from Pfarrer B. to visit him in his home at Stuttgart.

The day had scarcely begun to break over Stuttgart, and we were still buried beneath the immense down pillows, which serve at once for sheet and blanket and coverlet to a German bed, when we saw the figure of our kind host advancing towards us in his dressing-gown, candle in hand, to announce that it was five o'clock, and that, with a long day before us, we must be stirring betimes. His summons was seconded by the cry of the watchman beneath our window:—

“ Steht auf im Namen Jesu Christ !
 Der helle Tag vorhanden ist.
 Der Tag vertreibt die finstre Nacht :
 Ihr lieben Christen, seyd munter und wacht,
 Und lobet Gott, den Herrn ! ”

The watchman was premature in saying that the shades of night were already giving place to the brightness of day, for it was yet almost as dark as midnight. But his voice was not unwelcome to us, as we were already eager in an-

ticipation of the pleasures of the day, and, though appropriate at all times, there seemed a peculiar fitness on the morning of the Sabbath in his summons to all in the name of Christ to be up and join in the praise of the Lord.

We took a slight breakfast with the pastor and his wife at six o'clock, uniting first in family worship, and before long were driving down the broad Königs-strasse, and, being joined by the excellent Dr. Barth of Calw, whose "Bible Narratives" have made his name so well known in many lands, were soon mounting the high hills, and pursuing the beautiful southern road in the direction of Tübingen. The Pfarrer B. and the Frau Pfarrerinn, Dr. Barth and ourselves, filled the four corners of the carriage, and a happy ride we had together; first, winding up the hill-side, till Stuttgart lay at our feet, and, with the red streaks of the early sunlight bursting through the grey mist of the autumn morning, looked most beauteous, nestling in its bed of fruit and completely circled round with an amphitheatre of hills whose vine-clad sides seemed ready to pour their luxuriance down upon the city, and to justify the proverb,—

*"Si l'on ne cueillait à Stuttgart le raisin,
La ville irait se noyer dans le vin;"*

anon, enjoying the clear morning air as we pursued the road on the higher ground, having ever some new beauty of landscape or some fresh feature of country life to admire; and throughout the way, participating in the cheerful Christian intercourse of the simple-minded but amiable and warm-hearted Barth, and of our other estimable companions.

By half-past eight, we were at the door of the worthy pastor of Unter Sielmingen, the village where we were to be present at the morning service, which Dr. Barth had engaged to conduct. We entered the Pfarrer S.'s house, and from its excellent host and hostess had the warmest reception. The sitting-room was simply furnished after the manner of

a German village clergyman, whose income, it must be remembered, does not approach that of the artisan in our own country, but who, nevertheless, finds himself able to provide for all the simple requirements of his house; to fill his library with a good store of learning and a critical apparatus better than is possessed by one in fifty of our own clergy; and to give, too, an air of taste and refinement to his dwelling by a few well-chosen engravings and other simple decorations, and by a creeper or two hanging from the elegant flower-basket. Other friends arrived; and to each, on entry, by the good care of the pastor's wife, were handed a cup of chocolate and a biscuit, which afforded a grateful refreshment before the morning service.

At nine we stepped across the road, for the village church was opposite the humble manse. It was a strange but interesting scene. The road, before so quiet, was now filled with country folk from far and near, all in the peculiar costume of the Suabian peasantry, who were flocking to the house of God, and, as they passed, showed their reverence and love for their venerable old pastor, who distributed his words of kindness and blessing to the different friends who had the fortune to meet him as he walked towards the porch. Within, the sight was very pleasing. The church was full; its lower seats, according to the custom of the Lutheran service, being occupied by the female, and the galleries by the male portion of the congregation, besides which were seats appropriated to the children of the Sunday-schools. With the exception of the occupants of the minister's pew, every soul in the place belonged to the peasantry. Every woman wore the same dress, marked by the same sombre shade, and with the same brown streamers descending from the simple head-dress of plaited ribbon. The men were no less uniform in their costume; with their three-cornered hats,

and with the high-collared, long-tailed, broad-buttoned coat of home-spun blue.

The worthy doctor appeared in the pulpit, and the service commenced, after the salutation and singing, with a short liturgy. There was no reading of Scripture beyond that contained in the Gospel and Epistle of the day, and the beautiful words, "Behold, what manner of love the Father hath bestowed upon us, that we should be called the sons of God," which commenced the epistle, gave the preacher a text for a discourse characterised by remarkable simplicity and impressiveness, and which was listened to with the most devout and earnest attention. Before the sermon the preacher knelt in the pulpit for silent prayer; and, at the reading of the text as well as the portions of Scripture contained in the service, the congregation all stood, but few comparatively followed the passage in Bibles of their own.

One of the customs observed in the Church service is sufficiently singular to claim notice. At the reading of the Lord's Prayer, which occurs once in the Liturgy, the bell in the church-tower is rung, beginning as the minister says the words "Unser Vater," and ending with his and the congregation's "Amen." This is a universal custom in Würtemberg, and is designed that the people in the houses, who are prevented from attending the public service, may be informed as to the time at which that prayer is being offered, and be able in private to join their voices with those of their brethren in the church, that so a united prayer may ascend as with one voice from church and house, in the words of their Saviour's own teaching, to their Father which is in heaven. The same ringing of the church-bells may be heard in Stuttgart, and in every other city, town, and village, in this part of Germany, every morning throughout the year, to call the people, not to

public, but to private prayer, and every evening at sunset for the same object. And so much is this not a mere form, but a reality, that it is no rare thing, if not for the townsman, at least for the country labourer, when he hears the morning or evening summons, to throw down his implement of husbandry, and, kneeling in the open field, to offer up his prayer to his God and Saviour. The church-bell is used for a like purpose on another occasion, which we will mention,—that of baptism. This rite is generally performed at a period when the mother of the baptised is unable to go to the service. The bell is, therefore, sounded at the precise moment when the child receives the sprinkled water, that the mother, within her own home, may be able better to realise the time of the ordinance, and thus unite her prayers with those within the house of God in the dedication of her offspring.

Amidst the warm greetings of the villagers, we again passed out of the churchyard, and across the road to the Pfarrer S.'s house, where we found the dinner prepared for us, of which we partook at the good German hour of eleven. The dear old pastor sat at the head of the table; the "gude-wives" present occupied themselves in showing what true German hospitality is; whilst for ourselves—though, we must confess, we enjoyed it exceedingly—our position of honour next our host compelled us, through the courses of thin soup, sliced potatoes, well-boiled flesh, sourcrout, and other necessities of German country fare, for a whole hour to listen to the most thorough Suabian, and to hold a conversation on matters weighty and interesting, with the peculiar circumstance of our own share being understood, whilst the replies were in great part incomprehensible. This was from one who, it must be remarked, is perfectly able in the pulpit to speak pure German, and who—as is the case with every clergyman before he can receive ordi-

nation—can converse in Latin, and write composition in French, Latin, Greek, and Hebrew: but who, when sitting at the head of his table, or even talking with a poor Englander, would have found it an impossibility to have relinquished the loved *patois*, which, in like manner, for the sake of its homeliness and familiarity, was generally adopted in the social circle by the others of our company. We need not travel as far as Germany, however, to find the same experience in the home-life of those to whom a provincial dialect is part of their birthright, and most intimately associated with all which they hold most dear.

We left Unter Sielmingen at noon; but without bidding farewell to the inmates of the hospitable house where we had spent the morning, for they were, like ourselves, to be present at a great Jahres-Fest at the village of Plieningen, which was to take place in the afternoon. The Pfarrer S. and the ladies took the carriage; the other clergymen and ourselves walked. And, did space permit, we could say something of that walk, in remembrance of the beauty of the day and of the landscape, and, still more, in remembrance of the happy conversation in which we joined. At one we were seated in the parlour of the Pfarrer Sch., and enjoying the intercourse of those assembled in his house. The pastor himself was just recovering from the last of a series of successive illnesses of a severe character, which had kept him from his ministerial duties through the greater part of a twelvemonth, and one of which had for a time almost deprived him of sight. The trial had been a most heavy one, but none of all the company seemed so cheerful or happy as himself. His sons were present,—two fine young men, the one of whom had been for some time engaged as a missionary in a home station; the other had just completed his course at Basle, and was spending his last Sabbath in his Württemberg home, before leaving friends and fatherland

for the mission in Western Africa. The wife and daughter busied themselves, after the manner of the country, in entertaining their guests, and in setting before them the usual repast of coffee and biscuits. The little room was at last full to overflowing, as most of the clergy from the neighbouring villages came to take part in, or to be present at, the service of the afternoon.

At two our party went in a body to the village church. The place was large, capable of holding at least a thousand persons; but on approaching it, we already saw that it was more than filled. Many who had walked, probably miles, were unable to get within the doors; and when, after our entry, the congregation began the service with one of Luther's hymns—simple peasants though they were—their voices rang through the place in beautiful harmony, and with the power and emphasis which come alone from a warm and deeply-moved heart. The occasion which brought so many warm hearts together, was the anniversary service of an institution at Plienigen for destitute children, called the *Wilhelms-Pflege*. The children were present, to the number of sixty-eight, and were to be examined as to their religious teaching by our friend the pastor of Unter Sielmingen, as well as to give proof of their voices by singing alternately with the congregation. There were addresses given by different clergymen present suited to the occasion; and a report presented of the progress of the institution during the past year. The addresses were to us peculiarly pleasing, as showing the earnestness and impressive fervour with which the Gospel is preached in some, at least, of the churches in this region. There was much simple exhibition of divine truth, and much stirring appeal to the hearts and consciences of all, in what was heard that Sunday afternoon in the village church at Plienigen.

The catechising of the children was no less interesting.

The questions were put at the pleasure of the examiner, and embraced, with that systematic order and comprehensiveness so congenial to the German mind, a general survey of the whole compass of Christian doctrine. The examination lasted probably forty minutes, and, viewing the intelligence and correctness displayed in the answers, reflected the highest credit on the religious training given to these neglected children. Our own weakness in the language induced us to place ourselves at the side of the pastor during the examination, where the advantage of our position, and our intense interest in the proceedings, enabled us to hear and understand the whole. The old enemy—the provincial dialect—was the only circumstance that prevented us from taking a part in the examination ourselves,—a liberty which we are quite sure would have been accorded to us; but the difficulty of understanding, and the danger of being misunderstood, were obstacles with which we thought it unwise to risk the encounter.

At five o'clock, when the service had concluded, we were conducted to the institution itself. The children were already seated before their evening meal, and, judging by what we saw of the good order and arrangement of their apartments and of the establishment generally, were evidently well cared for and under very efficient superintendence and training. Besides receiving a good intellectual and religious education, they are taught various trades, manual labour of all sorts, and the cultivation of the ground. They live, in fact, as much as possible by the fruit of their own labour: being their own shoemakers, their own tailors, and especially their own farmers. Their living is frugal, yet good and sufficient; and they are kept hard at work, so as to be fitted for the duties of after-life. The remaining expenditure, probably about one-half of the whole, is met by the voluntary contribution of Christian people—them-

selves, for the most part, in what we should call poverty, yet able to spare of their penury something towards these labours of love.

We should not have said so much of this institution at Plieningen, were it not that such asylums are numerous in Würtemberg, and form an important feature in the charitable provisions of that kingdom. The Plieningen institution has been in existence thirteen years; others go back to a much earlier date. One at Stammheim, near Calw, the matron of which we met at Stuttgart, has been established more than twenty-seven years, and has been remarkably blessed, not only as a means of rescuing children from destitution and crime, but also in guiding them in the paths of righteousness. In institutions of this kind in Würtemberg there is a home and education provided for, we believe, as many as 1400 children, and not less than 5000 have passed through these establishments during the course of their existence.

Our return to the Pfarrer Sch.'s house, the pleasant intercourse which followed, our homeward drive to Stuttgart, and the other engagements of the day—although deeply interesting to ourselves—we shall, for the sake of brevity, pass over, with the simple statement that they were in pleasing harmony with the experience of the morning, and completed the picture, so grateful to our own minds, of the warm piety, the simplicity, and godly sincerity, which characterise religious life amongst the Würtemberg peasantry, and of the happy blending of cheerfulness with religion, contentment with godliness, which is exhibited, notwithstanding its many privations, in the social and domestic life, alike of pastor and of flock.

T. H. G.

BLUCHER'S "FORWARDS!"

A BALLAD FOR THE TIMES.

BRavo! brave old Teuton heart,
Noble "Marshal Forwards!"
Bravo! every better part,—
Nature, Providence, and Art,—
Agrees in going forwards;
If we gain, to gain the more
Pressing on to things before,
Ever marching forwards;
If we lose,—by swift attack
Soon to win those losses back
By the rule of—Forwards!

Forwards! it's the way of life
Always urging forwards,—
Be it peace, or be it strife,
Stagnant-ripe, or tempest-ripe,
All is moving forwards.
Generations live and die,—
Stars are journeying on the sky
By the law of Forwards.
Space and Time, and you, and I,
And all—but God's Eternity—
Tend for ever forwards!

So, good youth, go on and win!
Conquest lives in Forwards.
Go, if once you well begin,
Steering clear of self and sin,
Forwards, ever forwards!

Never could the foe withstand
Honest Blucher's one command,
 ' Forwards, soldiers ! forwards :
Never shall the foe be met
Bold enough to front thee yet,
 If thy face is forwards !

MARTIN F. TUPPER.

Albury.

STANZAS.

BY MRS. ALARIC WATTS.

How readily the coward heart,
 As though in love with pain,
Turns to its burthen once laid down
 To take it up again.

The mind, so wayward is its mood,
 Will argue from the past,
And fear to taste the present good,
 Because it may not last.

Some speck on the horizon's band
 Its brightness may deform,
We say, "Behold the little hand,
 Forerunner of the storm."

But mariners, than we less dull,
 Long tossed on stormy seas,
Are grateful for the moment's lull
 That gives their vessel ease.

Strength with to-morrow's cares will come,
 To bear them as we may ;
The manna that our God hath sent
 Is given for use *to-day* !

ROBINS AND THEIR SONGS.

ROBIN to the bare bough clinging,
What can thy blithe music mean?
Like a hidden fount, thy singing
Seems to clothe the trees with green.

What warm nest for thee hath Nature,
Where thy soft red breast to lay?
Sing'st thou, little homeless creature,
For the crumbs we strewed to-day?

Other birds have fled this dun light,
Soaring on to regions fair,
Singing in the richest sunlight,
Singing in the starlit air:

Hiding 'mid the broad-leaved shadows
Of the Southern woods at noon,
Filling all the flower-starred meadows
With the melodies of June.

Knowest thou the woods have voices—
Poet-voices full and clear;—
Strains at which the heart rejoices,
Feeling the Unspoken near;

Pouring music like a river,
Many-toned and deep and strong,—
Tones 'midst which, like childhood's, quiver
Thy few notes of simple song?

Then the "crimson-tippèd" thing,
Like a daisy among birds,
With a quiet glee did sing
Strains condensed thus in words :

" Well I know the joyous mazes
" Of the songs so full and fine ;—
" Very faint would be God's praises,
" Sounded by no voice but mine !

" Yet the little child's sweet laughter
" Wakes it no responsive smile,
" Though the Poet singeth after,
" And the Angels all the while ?

" What I sing I cannot measure,
" Why I sing I cannot say,
" But I know a well of pleasure
" Springeth in my heart all day."

So I learned that crumbs are able
Lowly hearts to fill with song,—
Crumbs from off that Festal Table
Lowly hearts will join ere long.

He Who wintry hours hath given,
With the snows gives snowdrops birth ;
And while Angels sing in heaven,
God hears robins sing on earth.

Only keep thee on the wing,
Music dieth in the dust,
Nothing that but creeps can sing,
Soaring, we can sing and trust.

E. C.

OURSELVES.

THE SPINAL MARROW AND NERVES.

THE upper part of the head is well arched and imperforate; it guards the tender substance of the brain and secures its integrity. The under-surface, or base, of the cranium, less exposed to injury, is perforated by many openings of different sizes. Through some of these the vessels pass which carry the blood to and from the brain: by others, those nerves which arise from the cerebral substance leave for their destinations among the organs of sense; the largest, called the Foramen Magnum, is immediately over the summit of the spinal column. The masonry of this column is very elaborate. It consists of twenty-four pieces, or vertebræ, built up on a strong hollow pedestal. Each piece consists of a solid body and several projections or processes. The processes fit so nicely, and overlapping check each other so effectually, that no violence, short of fracture, can separate one bone from another. The bodies of the bones are united, and yet kept separate, by a thick layer of cartilaginous cement: this, being elastic, fills up any fissure that would be produced, when we bend, or stoop, or incline to either side, if the pillar consisted only of solid materials: it diffuses too, and so mitigates, and renders innoxious, any shock received in falling, or jumping, or running, when the column is erect.* Each piece is bored through the middle, and the line of perforation is so true, that, when the bones are put together, a continuous even channel is formed, extending the whole length of the spine. On the upper and under edge of each of the vertebræ are two notches; fitting accurately with

* The late Mr. Abernethy used to say, "the head rides as if it was on a spring cushion."

corresponding notches in the bones immediately above and below, they form, at every joint, small apertures through which the nerves securely issue from the spinal marrow.

The interior of the shaft is lined throughout by the *dura mater*, that strong membrane, already described, which invests the inner surface of the skull. The whole is tied together by a series of ligaments, and formed into a firm yet flexible column; down this column, the *Spinal Marrow*, the "*silver cord*" of life, is prolonged into the pedestal.

The *Spinal Marrow* is a continuation of the *medulla oblongata*.* It consists of a double cylinder of the cerebral substance, invested with the membranes of the brain. The relation of the parts, however, is changed; for the medullary matter is now exterior to the cortical. Between the tender coverings a considerable quantity of limpid fluid is always present; it seems to help in defending the delicate materials from pressure or otherwise, besides lubricating and keeping them moist.

Proportionately to the weight of his body, man has, as might be expected, a much larger spinal marrow than any other animal.

The *Nerves* are tender, delicate, white cords (not hollow tubes), consisting of filaments of the cerebral substance, enveloped in membranous sheaths. Under the microscope some of the filaments are found to be fibrous; others are cellular; a large segment is studded with corpuscles, forming what are called *Ganglia*, of different sizes.

This difference in structure, and the difference in their functions, enable physiologists to arrange the nerves into three sets:—

1. Nerves of Sensation;
2. Nerves of Motion;
3. Sympathetic, or Ganglionic Nerves.

* See the sketch in "*Excelsior*," No. XII.

The nerves of sensation have been subdivided into *Sensuous*, those of special sense, viz. *seeing, hearing, smelling, tasting*; and *Sensitive* or *tactile*, which endow almost the whole person with *feeling*.

Forty pairs of nerves issue from the brain and spinal marrow. Nine are called *Cerebral*, thirty-one *Spinal*.

Tracing the *Cerebral* in order, as they arise from the under-surface of the brain, the—

1st Pair is the *Olfactory*. Before leaving the interior of the skull they join, form a bulb, and again divide into many minute filaments: these pass through a perforated plate above the upper part of the nostrils; become diffused over the membrane which lines the interior of the nose, and endow it with the *Sense of Smell*.

2d Pair. *The Optic*. These are the true *Nerves of Vision*. Soon after emerging from the substance of the brain they unite very intimately, but almost immediately separate; each nerve then passes through an opening at the back of the orbit, pierces the eyeball, and becoming expanded in it forms a delicate membrane called the *Retina*, which renders the eye sensitive of the impressions of light.

3d Pair. *Motores Oculorum*. They chiefly supply the muscles which move the eyes. Each nerve gives off a branch, which penetrates the globe of the eye, and assists in inducing the movements on which the enlargement and contraction of the pupil depend.

4th Pair. *Pathetici or Trochleares*. These are the smallest of the cerebral nerves. They are devoted almost entirely to the muscles which move the eyes *obliquely*.

5th Pair. *Trigemini or Trifacial*. These are the largest of the cerebral nerves. Each nerve has three branches, and each branch many subdivisions. The *first branch* ramifies over the forehead the upper eyelid and nostril: it detaches filaments to the interior of the orbit and

eyeball. The *second branch* spreads over the upper jaw, the palate, the fauces, and parts adjoining. The *third branch* supplies the muscles of the lower jaw, and the adjacent glands. These are chiefly nerves of sensation, though not quite exclusively so; they derive feeling to the organs of special sense.

6th Pair. *Abducentes*. They go to the muscles which move the eyes outwards.

7th Pair. *Auditores*. Each nerve is composed of two parts,—a *portio dura* and a *portio mollis*; a hard and a soft part. The *portio dura* is a nerve of motion; it supplies the muscles of the head and face, the outer ear and the muscles around it; and detaches filaments to the muscles of the inner ear: it has been termed *the Nerve of Expression*.

The *portio mollis* is the tenderest of all the *nerves*: it is the true *Nerve of Hearing*. Within the inner ear it divides, subdivides, and is then diffused over the delicate membrane which lines the auditory cavities, making it sensuous of the impulses of sound.

8th Pair. *Par Vagum*. *Wandering Pair*. These nerves are of vital importance in the animal economy. In numberless ramifications they are distributed to the back part of the throat or windpipe; they give off fibres to the tongue; in common with the Great Sympathetic, they form *plexuses*,* from which arise the nerves that supply the lungs and heart; ultimately they terminate in the organs of digestion.

9th Pair. The *Linguales*. Lingual. They penetrate the muscular substance of the tongue and chiefly induce its movements.

There are thirty-one pairs of *Spinal Nerves*,—Eight in the neck, twelve in the back, five in the loins, six sacral.

* A *plexus* is an irregular network of nerve fibres, very like a ravelled skein of thread.

Each nerve arises from the spinal marrow by* a double root,—an anterior or *motor*, a posterior or *sensitive*; the filaments almost immediately unite and form a common trunk, into which are fused the functions of sensation and volition: they leave the interior of the spinal column, through the apertures between the vertebræ.

The eight pair of *Cervical nerves* (nerves of the neck) are distributed over the back of the neck and head, and parts adjoining: the lower five pairs give off branches, which form plexuses, whence proceed the nerves, that pass down the arms and forearms, and supply the hands and fingers.

The *Dorsal nerves*, twelve pairs, ramify over the back and trunk of the body; they also influence the muscles of respiration.

Five pairs of *Lumbar nerves* distribute branches to the lower parts of the abdomen within and without: they furnish the nerves which go to the upper and forepart of the lower extremities.

The *Sacral nerves* arise from that part of the spinal marrow, which is contained in the pedestal of the vertebral column, or os sacrum; they unite to form large plexuses which give origin to the *Sciatic nerves*. These are the largest in the whole body: they pass down the back part of the legs, detaching branches to all the parts in their course: descending with the arteries and veins, they supply the lower extremities, and are ultimately distributed to the ankles and feet.

Another section of the nerves, differing somewhat in structure, and very considerably in function, from those

* Sir Charles Bell was the first to discover, and to determine with great accuracy, the truth of this very curious fact. If the sentient root of one of these nerves is divided, the part supplied by that nerve loses *all its feeling*, though the *motion* of the muscles is quite unimpaired; and *vice versa*.

already noticed, is called the *Great Sympathetic*, or *Ganglionic System*.

Two nerve cords extend on each side of the spinal column, down the neck and chest, through the abdomen, into the pelvis. They are connected by large filaments with the brain, and all the nerves which arise from the spinal marrow, and directly or indirectly with almost all the other nerves. At most of the points of junction *Ganglia* are formed : from these issue branches which go to form secondary ganglia, and large plexuses ; whence proceed the nerves that actuate the stomach and other organs of digestion and assimilation. The peculiarity of this segment of the nervous system is, that it imparts neither sensation nor volition. In a morbid state indeed, the parts supplied by it are roused to consciousness, and often feel acutely ; but even then they are out of the control of the will. It seems to keep up a store of energy, collateral to and apart from that of the nerves in general, by which the organs of nutrition, which it almost exclusively influences, may fulfil their functions whether we sleep or wake, attend to them or not. The heart beats, the lungs play, digestion goes on, nutrition is accomplished, *involuntarily* and *unconsciously*. It harmonises, too, into one efficient confederacy, in the process of nutrition, organs so different both in structure and function, that it would seem to be impossible for them to work together for one common purpose if the result was not so perfect. By its extensive ramifications, those kindlinesses and disturbances which distant organs feel and show for one another are chiefly induced. If the head is pained or perplexed because the stomach is out of order,—if the lungs and heart are reciprocating their troubles or their well-being,—if the eye sees double because digestion is going on badly,—in short, if one part is feeling for another, it is due chiefly to the relationship produced by the *Great Sympathetic System*.

P. S.

THE WILD BOAR.

(*Sus scrofa*.)

WE have a specimen of the family of swine in that well-known and useful animal with whose portrait Sir Charles Bell furnishes the reader as an example of a head as remote as possible from the head of him who designed and executed the Elgin marbles. Although the learned anatomist brought forward the profile of this animal as the type of a "non-intellectual" being, yet there are instances enough on record to show that pigs are not devoid of intelligence, and are even, when trained, capable of considerable docility. "Learned pigs," however, such as are exhibited at country fairs, are a rare occurrence, and the family to which they belong is essentially one "gross" in character, and far from gainly in appearance. The most handsome of the race is one from West Africa, recently added to the Zoological Gardens, and described by Dr. Gray under the name of *Potamocheirus penicillatus*. The wild swine of Africa are, with this bright exception, anything but handsome, either in shape or colour; and the large excrescences on their cheeks and face give the "wart-hogs" a ferocious look which corresponds with their habits. In the East there are several species of wild swine. One of the most celebrated is the *Babyrusa* of the Malay peninsula, distinguished by its long recurved teeth, with which it was once fancied that they suspended themselves from trees, or rather supported themselves when asleep. Mrs. M'Dougall* refers to the wild hogs of Borneo, which seem to be dainty in their diet, as they think nothing of a swim of four miles from their jungle-home to places on the

* Letter to the Editor, *Naturalist*, vol. 104. 1854.



The Wild Boar of Syria and Egypt. (Sus Scrofa.)

.

3

river where they know there are trees laden with ripe fruit. These Borneo swine are active creatures too, as they can leap fences nearly six feet high. In South America the sow family is represented by the Peccaries (*Dicotyles*), of which there are two species, one of which is very abundant in the woods, and forms a most important article in the diet of the poor Indians. They, too, can swim across rivers, and although their legs are short, they can run very fast.

It is chiefly in the warmer parts of the world that the species of this family are found. They are all distinguished by the middle toes of each foot being larger than the others, and armed with hoofs,* the side toe or toes being shorter and scarcely reaching the ground. The nose terminates in a truncated, tough, grisly disk, which is singularly well adapted for the purpose of the animals, which all grub in the ground for their food. In some parts of France it is said that they are trained to search for truffles.

Having briefly alluded to different species "*de grege porci*," we now limit ourselves to our immediate subject.

The Wild Boar at no very remote period was found in the extensive woods which covered great portions of this island. The family of Baird derives its heraldic crest of a wild boar's head from a grant of David I., king of Scotland. This monarch was hunting in Aberdeenshire, and when separated from his attendants the infuriated pig turned upon him; one of his people came up and killed it, and in memory of his feat received from the grateful king the device still borne by the family. The name of a Scottish parish, and of one of the oldest baronial families in Scotland—Swinton, of Swinton in Berwickshire—is derived also from this animal, the first of the Swintons having cleared that part of the country from the wild swine which then infested it. It is

* "Divides the hoof, and is cloven-footed, yet cheweth not the cud."
—Leviticus, ii. 7.

curious to know that some large fields in the neighbourhood of Swinton still carry in their names traces of these early occupants. Dr. Baird informed the writer that there are four of these fields so distinguished:—"Sow-causeway," and "Pike-rigg," where the wild swine used to feed ("pick their food"); "Stab's Cross," where Sir Alan Swinton with his spear pierced some monarch of the race; and "Alan's Cairn," where a heap of stones was raised as a monument of his hardihood. In the southern part of our island only the nobility and gentry were allowed to hunt this animal; and in the reign of William the Conqueror any one convicted of killing a wild boar in any of the royal demesnes was punished with the loss of his eyes.

In many parts of the Continent the wild boar is still far from rare, and affords, to those who are fond of excitement, that peculiar kind of "pleasure" which involves a certain amount of danger. Scenes somewhat similar to those depicted by Snyders may still be witnessed in some parts of Germany; and in the sketches of Mr. Wolf, the able artist whose designs illustrate these papers, we have seen animated studies of this truly hazardous sport.

The nose of the wild boar is very acute in the sense of smell. A zealous sportsman tells us, "I have often been surprised, when stealing upon one in the woods, to observe how soon he has become aware of my neighbourhood. Lifting his head, he would sniff the air inquiringly, then, uttering a short grunt, make off as fast as he could."* The same writer has also sometimes noticed in a family of wild boars one, generally a weakling, who was buffeted and ill-treated by the rest. "Do what he would, nothing was right; sometimes the mother, uttering a disapproving grunt, would give him a nudge to make him move more quickly, and that would be a sign for all the rest of his relations to begin

* Boner's "Chamois-hunting in the Mountains of Bavaria," p. 97.

showing their contempt for him too. One would push him, and then another; for, go where he might, he was sure to be in the way." In the extensive woods frequented by this animal in Europe, abundant supplies of food are met with in the roots of various plants which it grubs up, in the beech-mast, acorns, and other tree productions, which during two or three months of the year it finds on the ground. Although well able to defend itself, it is a harmless animal, and being shy retires to those parts of the forests most remote from the presence of man. A site in the neighbourhood of water is preferred to any other.

Travellers in the East frequently refer to this animal and to its ravages when it gets into a rice-field or a vineyard; for although its natural food be wild roots and wild fruits, if cultivated grounds be in the neighbourhood its ravages are very annoying to the husbandmen, who can fully and feelingly understand the words of the Psalmist, "The boar out of the wood doth waste it." (Ps. lxxx. 13.)

Messrs. Irby and Mangles* as they approached the Jordan saw a herd of nine wild pigs, and they found the trees on the banks of a stream near that river all marked with mud, left by the wild swine in rubbing themselves: a valley which they passed was grubbed up in all directions with furrows made by these animals, so that the soil had all the appearance of having been ploughed up.

Burckhardt mentions the occurrence of the wild boar and panther together, or the *ounce*, as he calls it, on the mountain of Rieha, and also in the wooded part of Tabor. He mentions "a common saying and belief among the Turks, that all the animal kingdom was converted by their Prophet to the true faith, except the wild boar and buffalo, which remained unbelievers; it is on this account that both these animals are often called Christians. We are not surprised

* Travels, (Home and Colonial Library,) p. 147.

that the boar should be so denominated ; but as the flesh of the buffalo, as well as its *Leben* or sour milk, is much esteemed by the Turks, it is difficult to account for the disgrace into which that animal has fallen among them ; the only reason I could learn for it is, that the buffalo, like the hog, has a habit of rolling in the mud, and of plunging into the muddy ponds in the summer time up to the very nose, which alone remains visible above the surface."* Wild boars were frequently fallen in with by this traveller during his Syrian travels in the neighbourhood of rush-covered springs, where they could easily return to their "wallowing in the mire;" he also met with them on all the mountains he visited in his tour. In the Ghor they are very abundant, and so injurious to the Arabs of that valley that they are unable to cultivate the common barley on account of the eagerness with which the wild swine feed on it, and are obliged to grow a less esteemed kind with six rows of grains, which the swine will not touch.

Messrs. Hemprich and Ehrenberg tell us that the wild boar is far from scarce in the marshy districts around Rosetta and Damietta, and that it does not seem to differ from the European species. The head of a wild boar which these travellers saw at Bischerre, a village of Lebanon, closely resembled the European variety, except in being a little longer. The Maronites there, who ate its flesh in their company, called it *chansir*,† a name evidently identical with the Hebrew word *chasir*, which occurs in the Bible. The Turks, according to Ehrenberg, keep swine in their stables, from a persuasion that all devils who may enter will be more likely to go into the pigs than the horses, from their alliance to the former unclean animals.

A. W.

* Travels in Syria and the Holy Land, p. 9. † *Symbolæ Physicæ*.

REVIEW OF THE MONTH.

THE Church of Rome has nearly completed the deification of the Virgin Mary. On the 8th of December, after four days spent in solemn consultation with several hundred bishops and high ecclesiastics, assembled some of them from regions as remote as China and Nova Scotia, the Pope proclaimed from the throne of St. Peter, "It is an article of faith, that the Blessed Virgin Mary, from the instant of her conception, by a peculiar privilege and by the special grace of God, through the merits of Jesus Christ the Saviour of mankind, was preserved exempt from all taint of original sin." The cannon of St. Angelo saluted the new dogma, and all the bells of Rome invited the world's homage to the "Queen of Heaven;" but from France, Belgium, and other Papal realms, the Roman rejoicings have brought back a very feeble response. A few of the assembled prelates,—the "Moniteur" says thirty-two, the "Univers" says only four,—demurred to the seasonableness of the proceeding; and most sensible Catholics feel that they are asked to believe quite enough already. We are disposed to agree with the Tuscan correspondent of the "News of the Churches," who says, "It is the vanity of Pio Nono that has forced on this matter. The poor old man wishes to signalise his reign in some way; and as he has no administrative talents, and made a pretty mess of his attempt at politics, he has now tried his hand on the dogmas of the Church."

Occasional intercourse with friends from Sweden has lately attracted our attention to that fine old land. Amongst the students at its universities, and amongst the inhabitants of various districts, there is a rapid increase of religious earnestness, which has been materially increased by the transla-

tion of English books and tracts; but, finding inadequate provision for their spiritual cravings in the preaching of a formal clergy, many of the people have begun to meet for mutual edification in private conventicles. Against these there are heavy penalties, the enforcement of which is likely to give rise to grievous persecution; whilst, to aggravate the evil, some of the Separatists have begun to doubt the lawfulness of infant-baptism. On the other hand, holding the doctrine of "Sacramental efficacy" to the full extent of sacramental salvation, the parental government of Sweden insists on the baptism of every infant born into the kingdom; and the collision betwixt Christian conscience and the law of the land has already given rise to some distressing incidents. But, as many of the younger clergy are pious men, and as there is a growing sentiment in favour of liberty of worship, we trust that happier times are at hand. Meanwhile a student writes to a friend in Scotland, "Even from Lapland we hear of lively awakenings,—how whole villages have split up their brandy-vats, which formerly were greatly valued by them;—how the judges in some districts have nothing to do, because the people are reconciled in love and peace with one another."—"Record of the Free Church.") And as one act of patriotic legislation, it is worth mentioning that the tax on ardent spirits has been increased two-and-thirty fold. The havoc which intemperance is working amongst the inhabitants has startled the king and the parliament.

The Edinburgh press has been very diligent this winter, and has produced several books of solid and enduring value. The third and fourth volumes now published complete Dr. Gordon's posthumous work, "Christ as made known to the Ancient Church;" a work which, with its sanctified intellect and unpretending grandeur, will form a worthy monument to a "Master in Israel." Under the title, "The Doctrines of the Bible developed in the Facts of the Bible,"

the Rev. George Lewis has thrown a fresh interest over the study of the Old Testament, and has furnished for the study of Christian families a book of incidents vividly narrated and of great lessons strikingly enforced. To Dr. Gardner we are indebted for a "Christian Cyclopædia," carefully compiled, and combining in one goodly volume the several merits of a Dictionary of the Bible and a Cyclopædia of Theology and Church History. In the border land between theology and letters we have "The Christian Life, Social and Individual," by Peter Bayne, M.A. Its author is an enthusiastic admirer of Carlyle, and has, with great ability, brought the Christian faith and the Christian philanthropy to solve those matters which are too hard for the Chelsea philosopher. To young men especially we would recommend this volume with its thoughtful reasonings and its brilliant biographies. In fiction Heinrich Conscience's "Tales of Flemish Life," (translated,) are very charming, and entirely new. And though late, we cannot omit our emphatic tribute to "The Quiet Heart,"—a story which, with its deep clear insight, its gentle but strengthening sympathies, and its pictures so delicately drawn, has captivated numerous readers, and will linger in many a memory a good and pleasant influence.

Under the superintendence of the Rev. R. Bickersteth a series of "Christian Biography" is announced, and has made a good beginning in a new Life of William Cowper. We have been much interested in a sketch of "The Chinese Rebel Chief, Hung-Siu-Tsuen," by the late excellent Mr. Hamberg. And to those who desire an account of the Vaudois Christians, at once brief, authentic, and popular, we would recommend Miss Willyams' "History of the Waldensian Church," which tells nothing but what we want to know, and nothing which a well-informed Waldensian would not countersign.

Three weeks ago we had the opportunity of visiting the Free Library at Manchester. Although at an hour so early as four in the afternoon, there could scarcely be fewer than two hundred persons present, many of them evidently working men. The Library now contains nearly 30,000 volumes, and under the guidance of the intelligent librarian, Mr. Edwards, we had an opportunity of rapidly inspecting its contents. It is, as it ought to be, especially rich in British history and topography, and its collection of political and commercial pamphlets, already amounting to thousands, promises soon to be unique. Nor were we sorry to see in it a few bibliographical curiosities, such as the first edition of "The Paradise Lost," and the second edition of Shakspeare. During the year which ended on September 5, the issues from the Reference Department amounted to 64,578 volumes, and from the Lending Department to 77,767 volumes.

Mr. Lowe, of Highfield-house Observatory, near Nottingham, has published his *resumé* of the weather of 1854. In some respects it has been a remarkable meteorological year. In March the barometer, reduced to the level of the sea, rose to 30·928 inches: in January it had been as low as 28·982, a range of two inches in two months. On January 2 and 3 the thermometer sank to -4° ; in July it rose to 86° , showing a range in temperature of 90° : but between the greatest cold on the grass and the greatest heat in the sun there was a range of 124° . The drought was also unusual, there being twelve inches less than the ordinary amount of rain. In the months of February, March, April, June, September, and October, there were only three inches of rain, and out of 180 days 129 were fine. The first snowdrop flowered on the 20th of February, being twelve days later than usual; the first cuckoo was heard on the 8th of May, eleven days "behind time;" but the first strawberries were ripe on the 14th of June, a day earlier than the average.

SCENES IN HISPANIOLA.

I. THE MORNING RIDE.

It was a lovely night in the Tropics. A sky of the deepest purple was studded with stars that flashed and sparkled, like gems on the mantle of an Oriental monarch. The moon had set, and lofty woods on each side cast the narrow rocky bridle-path into almost total darkness. The air was balmy, fragrant, and cool; and a breeze was sighing musically, like the cadences of an *Æolian* harp, in the tops of the trees.

On such a night, in a month that to us would be stern and bitter winter, about the middle of the last century, three men were slowly wending their way, down one of the little valleys that occur by hundreds in the central mountainous region of Hispaniola. They had just left the gate of an extensive coffee-plantation, the property of one of them, with a view to seek adventure and novel entertainment for another. All three were well mounted, on the sure-footed and mettled horses that the pastures of the island produced so abundantly.

The youngest of the party was a handsome man of some seven-and-twenty years, whose dress, though loose and light in accordance with the clime in which we find him, was not unsuited to the rank of a young Spanish *hidalgo*. Don Carlos de Badajar, the descendant of one of those noble families to whom lands in Hispaniola had been assigned soon after its discovery, was the first of his name who had personally visited his estates. The revival of literature in Spain, under the wise administration of Fernando VI. and Carlos III., had been specially felt in the University of

Their way now led through a broad, grassy dell, around which the forest stood like a black border; but by the starlight the travellers could see a rivulet winding along the bottom, and clumps of orange and other fragrant fruit-trees studding the meadow. A dozen gushing throats were sending up bursts of melody from these trees, serenading the burning stars of that pure sky.

"These are the *Ruiseñors*, as we call them," said Gomez; "but I have heard my father say they are not the same as the Ruiseñor of Spain."

"They may well compare with that most renowned songster of the old world, that our Moorish invaders taught us to call 'the Lord of the Rose.' Solemn and sweet the music is! Doubly sweet and doubly solemn under such a starry heaven as this, with all silent else. It is like the singing of the vesper hymn in the cathedral of Valladolid, when only a solitary lamp is burning."

"Rather matins, for we cannot be far from daylight now," said the planter. "Listen to the *Guitaguitas*."

Numbers of voices, uttering in rapid succession the syllables by which he had designated them, had suddenly filled the air; so suddenly that they seemed as if they proceeded from the spiritual tenants of the air itself, and the more so, because the eyes directed upwards could detect no substance, no flitting body, nothing but the quivering and glittering stars. Yet the voices manifestly swept by, sometimes close to the head, then remote and far up, varied at intervals by a hoarse booming note, like the bellow of a bull. At last the hidalgo thought he detected shadowy forms flitting along in lines, and crossing each other's courses at all angles.

"We always consider these birds a token of daybreak, for they scream thus only just before morning twilight, or

just after evening. But there is another sign. See the cross yonder! it has begun to fall."

Don Carlos looked to a cleft in the mountain, and beheld in the sky thus revealed, not far from the horizon, the beautiful constellation of the Cross, that symbol of the Christian's faith, which, from its blessed associations, and from its position, can scarcely fail to draw his thoughts, as well as his eyes, from earth to heaven.

The land-wind had freshened, and came down the gullies in gusts from the mountain, cold enough to make the travellers quicken their steeds, but laden with the fragrance of a thousand flowers, that yield their perfume most freely to the dews of night. But it was night no more; for a single slender pencil of rosy light suddenly shot from the eastern mountain-brow to the zenith, as distinctly as if a narrow orifice had been opened in the sky; and, quick as thought, other rays diverged from the same point, darting across the heaven, till the whole vault, even to the western quarter, resembled a vast fan of pale crimson radiance. At the same instant the *Pipiri*, from the crown of a neighbouring cocoa-nut tree, saluted the dawn with his shrill cry of *pipi-pipi-piroo*; the clarion of the cock and the clack of the pintado arose from some negro-yard within the woods; doves moaned plaintively from the river-side; the Ani began to call from the fruit-trees, and the Chinching to imitate, with his metallic voice, the smittings of the smith upon his anvil. Daylight was come, and nature was awake and dressed.

On looking round the travellers found themselves in a lovely valley; the narrow road, a scarcely trodden path upon the short green turf, followed the windings of a little clear rocky stream, in which were seen several *garzas*, or herons of snowy plumage, wading with stately gait, or standing with bent neck and intent gaze, watching for prey; these, as the

horsemen approached, successively rose on broad flapping wing, only to settle again as soon as the intrusion was past. The ground receded on either side of the rivulet, forming a broad plain of short smooth grass, brilliantly verdant in the neighbourhood of the water, but showing elsewhere many wide patches of yellow-brown, the result of prevailing drought; for it was near the end of the dry season, and nature, especially in the lowlands, was longing for the vernal rains. Many trees, some in clumps, and others in solitary dignity, were studding the plain, giving it the beautiful appearance of an European park, except for their unwonted aspect and character. For here was the majestic Ceiba, a giant of vegetation, whose enormous trunk sent out on every side great perpendicular spurs, like walls of timber radiating from the centre. And here and there towered the elegant Palma real, its slender stem, swollen in the middle, rising like an iron pillar to the height of a hundred feet before it threw out its beautiful globose crown of fronds. But chiefly grew here the aromatic Pimenta, to whose growth this valley was devoted; the smooth white trunks of this elegant tree were seen all around, and the air was fragrant with the spicy odours that emanated from the glossy myrtle-like foliage, and especially from the black pungent berries which scores of gaily-coloured birds were eagerly devouring. Around all arose at some distance an amphitheatre of hills, partly covered with woods, and mostly crowned with tufts of Bamboo, that gigantic grass, which spreads out its arching tufts like plumes of ostrich-feathers. Lofty mountains, blue and distant, gave a noble background to the picture, as the veil of mist that had lain in the valleys rolled up their sides, and were dissipated in the beams of the advancing sun, which was arraying their summits with crimson and gold.

Towards the end of this valley, smiling in tropical beauty and loveliness, the travellers passed through a scat-

tered *villorio*, or hamlet, of low straggling houses, each embowered in its grove of fruit-trees, and surrounded by fences of prickly shrubs. There was a mingled hum of many confused sounds; the poultry, the domestic animals, the small birds that delight to congregate around human habitations, the bees that were murmuring in the gardens, and the human voices that came from the open doors and windows,—widely different from the utterances of the forest and the mysterious sounds of night,—that our friends felt to be cheerful and exhilarating as they drew up before a cottage.

“Here,” said Señor Gomez, “dwells my old facetious friend Padre Tomaso, the priest of the village; he is a capital shot and a keen sportsman; perhaps he will accompany us.”

The Padre was seated at a small table in the open veranda, up the posts of which many climbers were twining, loaded with beautiful flowers. He did not see the visitors as they passed through the gate, for he was anxiously turning over the leaves of a large book that was on the table before him, and gazing into it with a perturbed countenance.

“*Buenos dias, Padre Tomaso! Como lo pasa usted?*” shouted Gomez, as he sprang from his horse, and threw the rein to the negro Pepe.

The cloud passed from the worthy priest’s face in an instant, as he looked up over his horn spectacles, and holding out both his hands, returned the salutation. “*Vaya!* and is it my excellent friend Señor Gomez? Welcome, welcome; and welcome too the honourable cavalier whom you bring with you. Well, you are up early, and you are wise, for I see you are out for sport; and, as the proverb says, ‘Who would eat the hare for breakfast, must hunt him over night.’”

“We have not exactly done that, Padre; but we have

set out over night that we may catch him in the morning ; but what say you, will you accompany us ? This honourable gentleman is an hidalgo of Spain, Don Carlos de Badajar, eminent in wisdom and learning, who has taken the trouble to cross the ocean-sea to learn what strange things are to be found in our poor country,—to see with his own eyes the wonders of which the Admiral, Don Christopher, wrote and spoke to their serene majesties.”

“Most excellent Señor,” replied the Padre, turning to the young Spaniard, “I rejoice to make your acquaintance. Yes, there are things worthy to be known in this country. You shall breakfast with me, Señores ; and I think Don Carlos will own that our jerked wild-pork, and our pimentadoes, when grilled as my Paquita can grill them, have a flavour that nothing in old Spain can equal. At least, I never tasted anything like them in the refectory of San Geronimo. *Paquita, sirve el almuerzo!*”

“I fear we interrupt your devotions, Father,” said the stranger ; “for you were reading when we arrived.”

“It is my breviary, indeed,” he replied, shutting up his book, while the cloud of sadness again passed over his merry face. “I was searching for the exorcism, for you must know,” said he, lowering his voice, “Sathan is very powerful in these distant islands.”

He proceeded to inform them of the losses which his dove-cote and poultry-yard had recently sustained ; so many of his cherished pets having died, that he felt assured there was witchcraft in the case ; and his suspicions rested on a negro of a neighbouring plantation, who bore the reputation of an Obea man or wizard, and whose power was even more dreaded than the Padre’s own. “And yet,” he said, in a tone of ambiguous cheerfulness, “I trust that *Santa Maria purissima* is stronger than Sathan, and that I shall drive him out by means of bell, book, and candle. But

come, why should I trouble you with this? Let us go in, for breakfast is ready."

The viands justified the worthy priest's enthusiasm, and, to say the truth, none enjoyed them more than he; though the appetite of the travellers, whetted by the night air and the journey, was by no means lacking. The grilled pork was tender and game-flavoured; the great wild-pigeons had acquired an aromatic sapidity from feeding on the pimenta berries; and the flesh of the iguana was of equal whiteness and delicacy, and of superior richness, to that of a capon. The chocolate, coloured with annatto, was perfumed with vanilla from the fantastic flowers that drooped in festoons from the veranda. The fruits were freshly gathered, cool in the morning air, but full of fragrance and luscious sweetness, as the tropical fruits only are. The *aguacate*, dipped in the gravy and eaten with salt and pepper, melted like marrow on the palate; the roasted plantain smoked on the dish. The *guanabana*, a fruit as large as a child's head, was eaten like a custard by means of spoons out of the leathery rind; juicy oranges, russet *nisperos* of sugary sweetness, fragrant pines, and other noble fruits, were heaped on the table like the most ordinary productions; and the whole was finished with a delicate *dulce*, or conserve, of the crimson-pulped *guayabo*, which grew in such plenty on the banks of the little stream as to have conferred upon it the name of the Guayabino.

After the *benedicite* had been pronounced, and the olive damsel with kerchiefed head had removed the *dissecta membra*, the host slyly drew from a closet a black antique bottle, and, with a twinkle of his little grey eyes, put it on the table with glasses. "*Vaya!*" said he, "if it is a feast, let it be a feast! let us wash down the fruit with a glass of *vino tinto*. *A la salud de ustedes, Señores!*" Φ

HEARTS OF OAK.

ENDURANCE.

It is frequently said that the courage which enables us to face an immediate danger without flinching, is more common than that fortitude by which we patiently bear protracted suffering and privation. Still, it is from those who excel in courage that we expect the most striking examples of endurance; and the following incidents will serve to show that the spirit of a British sailor does not give way in the presence of danger which may be borne, but which cannot be averted.

Attached to the expedition of Commodore Anson in 1740 sailed the *Wager*, an old Indiaman, fitted up as a man-of-war and store-ship. She was worn-out and over-laden; her seamen were a motley and discontented set of unserviceable men; the soldiers whom she carried were invalids; and the voyage which she had to encounter was not only long, but through seas that have scarcely yet ceased to be the dread of navigators.

Stormy weather had carried away the mizen-mast, and strained the timbers, while it separated the vessel from her consorts; and through a slight error in reckoning, the ship had got into a position from which her crew, disabled by fatigue and sickness, could not extricate so crazy a craft. She was accordingly wrecked on an island off the western coast of South America, about ninety leagues to the northward of the Straits of Magellan.

At four in the morning, after a night dreadful beyond description, the *Wager* struck on a coast as inhospitable and dangerous as that of the Crimea. Every one thought his

condition hopeless; and most of the people being sick with scurvy, the scene on her deck was one of confusion and despair. Captain Cheap and some of his officers retained their presence of mind; and at daybreak, when the weather moderated a little, contrived to get the greater part of the crew on shore. But they had been pressed in the first instance, were disgusted at so tedious a voyage, disaffected towards the captain, and filled with despair by their misfortunes; so that many refused to leave the ship, and endeavoured to drown their reflections in rioting and drunkenness. This was not conduct befitting British seamen; but, indeed, few of them were in any way worthy of the name, and the faults of malefactors forced into the service must not be charged upon our "Hearts of Oak." The miseries of those who were an honour to the profession were enhanced by the faults of these men, and by so much the more is their fortitude to be admired.

Among these was the Hon. John Byron, then a midshipman, but afterwards well known as Commodore Byron, whose narrative we shall follow.

When on land their condition was little bettered, as they had wet, cold, and hunger to struggle against, and found only the ruins of an Indian wigwam to shelter them. Here they sustained a wretched existence by gathering limpets and wild celery, by fishing up from the wreck such supplies as they could find, and by killing sea-fowl, or even a sort of carrion crow which fed upon the mangled bodies of their companions cast up by the waves. A store-tent was established, in which provisions recovered from the remains of the ship were deposited; but the privations of the men induced them to steal from it so frequently, that Mr. Byron and his messmates, after being fatigued by day in hunting for sustenance, were harassed by night in keeping watch over it. Some savages were seen whose dogs they bought for food,

but who could not further assist them ; and after some time the long-boat, which had been unavoidably left on board, was freed from the wreck, and they began to prepare her for a voyage, in hopes of making their escape from their dismal situation, which was aggravated by constant storms, rendering it impossible for them to put to sea even to obtain water-fowl. Their number was reduced from 145 to 100 by famine and sickness, and the survivors suffered every day the severest privations. Mr. Byron, not liking any of the parties into which his shipmates had divided themselves, built a little hut, which he shared with an Indian dog, who could shift for himself, and had become greatly attached to his master. One day a party came to his habitation and told him they must take his dog or starve. He endeavoured to save his favourite, but they carried him off by force and killed him, whereupon his owner, thinking he had as good a right as the rest, partook of their meal. "Three weeks after," says he, "I was glad to make a meal of his paws and skin, which I found thrown aside and rotten."

At last the long-boat sailed, the crew intending to make their way home through the Straits of Magellan, and twenty were left, including the captain and four officers. These patched up the remaining boats and started for Chiloe ; but after great hardships, were obliged to return to their island. When they lost the yawl and were compelled to abandon some of their companions, for whom there was no room in their only remaining boat, it is affecting to read that these poor fellows, left thus to almost certain death, parted from their messmates with three cheers, and shouting, "God bless the king."

Soon afterwards they fell in with an Indian chief, who undertook to direct them to Chiloe. In his company they still suffered the most terrible privations and endured the greatest fatigues ; but in June (having been wrecked in

May of the previous year) Captain Cheap and three officers were happily landed on the island, the rest having died of starvation or been accidentally separated from their friends.

Upon one occasion during this period Mr. Byron, who had been steering, was called upon to row instead of one of the sailors, who expired from fatigue; and whilst he was thus employed one of the stoutest of the men fell from his seat under the thwarts, complaining that his strength was exhausted, and begging for some little sustenance to save his life. "I sat next to him," says the future commodore, "when he dropped; and having a few dried shell-fish (about five or six) in my pocket, from time to time put one in his mouth, which served only to prolong his pains; from which, however, soon after my little supply failed, he was released by death." The surgeon, also, who had been of the greatest service to the rest, both as hunter and interpreter, "died the death many others had done before him, being quite starved."

After their arrival at Chiloe their circumstances improved; and although they were not at first treated well by the Spaniards, whose prisoners they became, they afterwards spent above two years in comparative comfort in Chiloe, and finally arrived in Europe in December 1745.

About eight o'clock in the evening of the 27th of August, 1826, the Magpie, a small schooner, cruising off the western extremity of Cuba, foundered in a sudden squall. Eight miserable survivors of her crew of twenty-four clung to a boat which floated clear of the wreck. The boat, which had been capsized, was righted under the directions of Lieutenant Smith, the commander of the schooner, who retained his self-possession; and two men began to bale it out, the rest holding on by the gunwale. Scarcely had they commenced, when an alarm of sharks threw the men into confusion, and the boat was again capsized; but none appearing, the lieu-

tenant succeeded in restoring order, and the baling was resumed and continued until about ten o'clock in the morning, when a second cry of sharks once more disconcerted the sailors, and once more overset the boat. For a short time their enemies merely swam round them, but soon two of the men disappeared, and their cries told their fate. Yet Mr. Smith's exertions so far reassured his companions, that the work of baling was recommenced. Just then one of his legs was bitten off; but though thus tortured he endeavoured to control his feelings that he might not increase the panic of his men. Another limb was torn from his body; and he was about to let go his hold, when he was lifted into the boat. In the agonies of so terrible a death he disregarded his own sufferings, and calling to him a lad who appeared most likely to survive, desired him to tell the admiral that his men had done their duty, and that no blame attached to them. "I have but one favour to ask," said he, "and that is, that he will promote Meldrum to be a gunner." Then he shook hands with each, and the voice which had so long cheered that little company was silent for ever.

That day and the next night had nearly passed before Mr. Maclean, a mate, and Meldrum, by that time the only survivors, finally succeeded in getting the boat dry, and both of them forgot their fatigues in a sound sleep. But the pitiless sun soon deprived them of the poor refuge of forgetfulness, and made them sensible of the extent of their misery. Without sails, oars, or provisions, their situation seemed hopeless, until, at eight in the morning, the sight of a distant sail filled them with joy. The vessel approached within about half a mile, but then, to their dismay, altered her course, and no signals of theirs succeeded in attracting attention. Suddenly Meldrum conceived the idea of swimming to her, as a last hope, and boldly he started, but when he had accomplished two-thirds of the ever-

increasing distance his strength began to fail, and he shouted to the people in the brig, with what he expected to be his last breath. But he was heard, both were saved, and a gunner's warrant was never better earned than that which rewarded Meldrum's gallant conduct.

The narratives of the *Alceste*, whose people sustained themselves for three weeks on an unproductive island, amid hordes of hostile savages; of the *St. George*, wrecked on her way from the Baltic, on whose decks the unhappy survivors were compelled to pile up the bodies of their frozen companions as a shelter against the weather; and of many other shipwrecks, are familiar to almost every one, but, perhaps, the most singular instances of continued and patient endurance have been shown in the various Arctic expeditions of the present century.

Each of these voyages and journeys has been more or less a mere succession of hardships and difficulties, in which danger has constantly presented itself under new forms.

So, in Parry's first voyage, after encountering the customary perils of ice-navigation during the summer, the ships had but just reached Melville Island when they were warned of the approach of winter by a heavy snow-storm, in which seven men lost their way and were unable to reach the ship for three days, by which time they were severely frost-bitten. A very few days later the *Griper* was forced ashore by the ice; and her commander, Lieutenant Liddon, although urged to allow himself to be removed to the *Hecla*, as he was only then recovering from an attack of rheumatism, nobly refused to leave his post, and persisted in remaining seated on deck that he might give the necessary orders. Shortly after Sir Edward Parry began to make preparations for wintering in the Arctic seas, which was then looked forward to with the greater dread as he and his companions were to be the first to make the experiment. But he was not content with con-

sidering those dreary months of darkness as a period which called only for the exercise of endurance : he even thought of making an Arctic winter a time of enjoyment and happiness. The health of the men was preserved by attention to cleanliness, exercise, and warmth, while not only were their spirits sustained by plays and other amusements, but they were regularly taught in a well-managed school, and attained in the wildest district of the globe more intellectual (and some of them more spiritual) knowledge than they had acquired in the most highly-favoured.

In this first winter the greatest cold observed was -55° , and some idea may be formed of what those figures represent when we find that on the occasion of a fire breaking out in the store-house, with a temperature of -43° , sixteen men were frost-bitten whilst endeavouring to extinguish the flames. One of these, in his anxiety to save the dipping-needle, ran out without gloves, and his fingers in half an hour were so benumbed that "on his being taken on board, and having his hands plunged into a basin of cold water, the surface of the water was immediately frozen."

In Sir John Franklin's first journey overland to the Arctic Ocean, he and his companions suffered hardships greater, perhaps, than have been endured by any other expedition which has returned safely. During the winter of 1820-21 they were as "comfortable" as men could be in such a situation. They lived on reindeer's flesh and fish, with a little flour occasionally; and with reindeer's fat and strips of cotton shirts they made candles, but these luxuries were soon denied them. In the ensuing spring their meals became scanty, and they frequently had but one a-day, but on their return from their journey to the sea, of the ensuing summer, their condition became dreadful beyond expression.

A snow-storm of great violence overtook them on the 3d September, when they distributed their last morsel of

pemmican, "and having nothing to eat, and no means of making a fire, they remained whole days in bed" while the severity of the weather prevented them from prosecuting their journey. When they did start Franklin fainted, but recovered on eating some preserved soup. "I was unwilling," he says, "to take this morsel of soup, which was diminishing the small and only remaining meal for the party, but the men urged me to it with much kindness." Soon they were reduced to little more than a sort of lichen called *tripe de roche*, and they thought themselves fortunate when they found a supply, which they relished with "scraps of roasted leather." Their misfortunes increased when their progress was stopped by a branch of the Coppermine River, which, as their canoes had been broken by the falls of the people who carried them, and who were blown down by the wind, they had no means of crossing. After vain endeavours to cross by means of a raft, and after Dr. Richardson had been almost frozen in an attempt to swim across with a line, they succeeded in making a canoe. But the delay had been death to many of them. The officers were so weak as to be scarcely capable of walking; the Canadian *voyageurs* were desponding, and Hepburn, a faithful and devoted seaman, collected all the *tripe de roche* upon which Sir John and his officers lived. They reached, however, Fort Enterprise, to which they had looked with hope, but found it perfectly desolate, and were glad to sustain life by pounding and burning the bones which had been thrown upon the dunghill during their former residence there, which bones indeed had once before been treated in the same manner by some Indians who were short of provisions.

Several of the Canadians had died; one had proved treacherous and had murdered his companions with the revolting intention of lengthening a miserable existence by cannibalism, so that the survivors were compelled to put

him to death for their own safety ; and the only persons capable of the exertion necessary to collect the wretched scraps which they ate were Dr. Richardson and Hepburn, when on the 7th November supplies of food were received, and their troubles were soon afterwards ended.

But in the affecting journals of this expedition there is nothing to be found like murmuring and complaint. They shared their food and their shelter together ; they spent their strength for each other ; and they joined with resignation in their prayers to an Almighty Friend who had not forgotten them, and who delivered them out of their distresses. When, in consequence of their privations their "minds exhibited symptoms of weakness, evinced by a kind of unreasonable pettishness with each other," they endeavoured to overcome what they felt to be their own deficiency, and did not give way to this irritability or to the despair which so painful a failing might well have produced. "So trifling a circumstance," says Franklin, "as a change of place, recommended by one as being warmer and more comfortable, and refused by the other from a dread of motion, frequently called forth fretful expressions which were no sooner uttered than atoned for, to be repeated perhaps in the course of a few minutes." Can we too much admire the moderation of Hepburn, who "on one of these occasions," instead of giving way to passionate expressions, such as are frequently used with less cause, exclaimed, "Dear me, if we are spared to return to England, I wonder if we shall recover our understanding ?"

G. W. S.

COCKER'S ARITHMETIC.

IN the schools of England Cocker was long the presiding genius of numbers. Successive generations of schoolboys from his familiar book were taught the art of cyphering. The name of Cocker was as much bound up with Arithmetic as that of Euclid with Geometry. From the days of Charles II. to those of George III., his authority was supreme and undisputed. Towards the end of last century other books began to be used. Walkinghame's "Tutor's Assistant" was a general favourite for a time, and afterwards Guy and Bonnycastle grew famous, to be followed, in their turn, by more modern treatises. The class-books of arithmetic at present in use are innumerable. But the fame of Cocker survives, though his book has been superseded. His name is historical; and, what proves a still wider popularity, it is proverbial. The Chancellor of the Exchequer himself, in his Budget-speech of last session, was heard to clinch a financial argument with the remark,—
"that is right *according to Cocker*."

Edward Cocker was born in 1632. He was "a practitioner in the arts of writing, arithmetic, and engraving," as the title-page of his works records. He published, during his lifetime, various engraved copy-books; and John Evelyn praised him as "comparable to the Italians both for letters and flourishes." He also published a work entitled, "Tutor to Writing and Arithmetic." But the book with which his fame is chiefly associated was a posthumous publication. It was edited by "Mr. John Hawkins, writing-master, near St. George's Church, in Southwark, by the author's correct copy." The license bears the date, Sept. 3, 1677, and the name of the celebrated Roger L'Estrange. In an "epistle to the courteous reader," Mr. John Hawkins says, "I, having

had the happiness of an intimate acquaintance with Mr. Cocker in his lifetime, often solicited him to remember his promise to the world, of publishing his Arithmetic, but, for reasons best known to himself, he refused it; after his death, the copy falling accidentally into my hands, I thought it not convenient to smother a work of so considerable moment, not questioning but it might be as kindly accepted, as if it had been presented by his own hand." Some doubt has been thrown on the authenticity of the work, but we think without sufficient reason. Hawkins may have made alterations and additions, but he can hardly be charged with forgery, as has been done. Even if it were so, this would prove more completely the early and general fame of Cocker. But he could not have induced so many of Cocker's personal friends to sanction with their names a book of doubtful authenticity. The exact date of Cocker's death is not recorded, but Hawkins seems to have lost little time in bringing out a work "encouraging to his expectation, and the booksellers too." Mr. Edward Cocker's Proeme or Preface is a document worthy of preservation. It commences with an invocation, which, let us hope, was more than a mere formalism of usage, but rather indicating a devout dedication of his labours to the great Giver of his useful faculties. "By the secret influence of Divine Providence," he says, "I have been instrumental to the benefit of many, by virtue of those useful arts, writing and engraving; and do now, with the same wonted alacrity, cast this my arithmetical mite into the public treasury, beseeching the Almighty to grant the like blessing to these as to my former labours." He then discourses on the objects, advantages, and dignity of his art; bursting out into poetry, whether original or not we do not know:—

"Seven Sciences supremely excellent,
Are the chief stars in Wisdom's firmament :

Whereof Arithmetic is one, whose worth
 The beams of profit and delight shine forth ;
 This crowns the rest, and makes man's mind complete,
 This treats of numbers, and of this we treat."

Of his own treatise he speaks in terms somewhat boastful, which we almost suspect to be an addition of his editor, and concludes with a defiance to reviewers :—

"Zoilus and Momus, lie you down and die,
 For these inventions your whole force defy."

Whatever reception the book got from the critics of that day, the public gave it immediate and general support. Editions were published in quick succession, and the fame of the work spread far and wide. Our copy is of comparatively modern date, being of the fifty-second edition, printed in 1748, for R. Ware, at the Bible and Sun, in Amen Corner, C. Hitch at the Red-Lion in Paternoster Row, and J. Hodges, at the Looking-Glass, overagainst St. Magnus Church, London Bridge. It is edited by George Fisher, accomptant ; and the book is described on the title-page as "a plain and familiar method of arithmetic, suitable to the meanest capacity, for the full understanding of that incomparable art, as it is now taught by the ablest schoolmasters in city and country." A portrait of the author is prefixed, with these lines underneath :—

"Ingenious Cocker, now to Rest thou'rt gone,
 No Art can shew thee fully, but thine own,
 Thy rare Arithmetic alone can shew,
 Th' vast sums of thanks we for thy labours owe !"

Professor De Morgan, who has collected many curious notices of "Arithmetical Books," inquires when the name of Cocker became a proverbial representative of the art? He thinks that it dates from the appearance of Arthur Murphy's farce of "The Apprentice," played in 1756, in which the old City merchant's strong point is the recommendation of Cocker's Arithmetic, "the best book that ever was written,"

to the young tragedian, his son. We doubt this very much. It is more likely that Murphy took advantage of a name already familiar to the public, and that the fact of this popularity gave point to the worthy citizen's recommendation. A search in the literature of that time would probably furnish direct proofs of this. Two passages, though somewhat of a later date, occur to us. Dr. Alexander Murray, who rose from being a poor Galloway herd-boy to be Professor of Oriental Languages in the University of Edinburgh, in an autobiographical account of his early life, tells how he laid out his first earnings on books, among which one was Cocker's Arithmetic, "the plainest of all books, from which, in two or three months, I learned the four principal rules of arithmetic, and even advanced to the rule of three, with no additional assistance, except the use of an old copy-book of examples made by some boy at school."

In Dr. Johnson's narrative of his journey to the Hebrides he describes Anoch, a village in Glenmorrison, of three huts, one of which is distinguished by a chimney. "The house was built of loose stones, lined with turf, and wattled with twigs, which kept the earth from falling." The landlord was remarkably civil; and Dr. Johnson records, with some surprise, that he spoke English well, both as to grammar and accent, while on a shelf were some books, among which were a volume or more of Prideaux's Connexion. "Some time after dinner we were surprised by the entrance of a young woman, not inelegant either in mien or dress, who asked us whether we would have tea. We found that she was the daughter of our host, and desired her to make it. Her conversation, like her appearance, was gentle and pleasing. We knew that the girls of the Highlands are all gentlewomen, and treated her with great respect, which she received as customary and due, and was neither elated by it nor confused, but repaid my civilities without embarrass-

ment, and told me how much I honoured her country by coming to survey it. She had been to Inverness to gain the common female qualifications, and had, like her father, the English pronunciation. I presented her with a book which I happened to have about me, and should not be pleased to think that she forgets me." Dr. Johnson does not name the book, but in a letter to Mrs. Thrale, written soon after, he tells how tea was made in the hut by "a very decent girl in a printed linen gown," and adds, "she engaged me so much that I made her a present of Cocker's Arithmetic." An incident like this could not escape the observation and comment of Boswell. He tells us that the unnamed book gave rise to much inquiry in London, and to some merriment when it was known what it was. Johnson was not pleased with this, remarking that he had no choice in the matter, as he happened to have only that book about him. "One day," says Boswell, "when we were dining at Gen. Oglethorpe's, I ventured to interrogate him, 'But, sir, is it not somewhat singular that you should happen to have Cocker's Arithmetic about you on your journey? What made you buy such a book at Inverness?' He gave me a very sufficient answer. 'Why, sir, if you are to have but one book with you upon a journey, let it be a book of science. When you have read through a book of entertainment, you know it, and it can do no more for you; but a book of science is inexhaustible.'"

There is much entertainment, and instruction too, to be got out of an old arithmetic book, even apart from the scientific calculations to which Dr. Johnson referred. Without working a single sum, we have often had pleasant meditations over the pages of Cocker. Those examples, composed two hundred years ago, recall bygone times and manners, and awaken many literary and historical recollections. That problem about A starting from London in a post-chaise, and

travelling so many miles an hour, pursued by B riding furiously on horseback,—in how many hours, and after how many miles of travel, will A be overtaken? How this conjures up the days of highwaymen, and runaway matches, and expresses when telegraphs were undreamt of! And the plain sum in reduction of long measure, “I demand how many furlongs, poles, inches, and barleycorns, will reach from London to York, it being accounted 151 miles?” Imagination sees the great north road, along which Dick Turpin rode and Jeannie Deans trudged afoot, with its stirring traffic, and wayside inns, and busy scenes, now made desolate by the railways. In the questions where merchandise is introduced, we can see from the articles named what were the chief channels of commerce in those days, when the trade with the Indies was yet young, and when traffic ran in courses different from those of our time. Nor are illustrations wanting of subjects of social and political economy, such as of the value of the precious metals, and the remuneration of labour, and the rates of wages, and the interest of money, in former times. And when we look over the diversity of weights and measures in different parts of England, gratifying reflections are suggested on the consolidation of laws, and absorption of local usages into national customs, and the increased facilities of intercourse, and other themes suggestive of progressive civilisation and good government. There is history, as well as science and art, in Cocker's Arithmetic.

J. M.

THE STOCK EXCHANGE.

IN our papers on the Funds, we endeavoured to explain that the public debt, or any portion of it, once contracted, becomes an article of merchandise ; and that any person who chooses to invest his capital in it, instead of employing it in commerce or allowing it to lie idle, can without difficulty purchase a portion of the debt, which then stands in his name, and for which therefore he receives interest. The power of doing so is, doubtless, a great convenience to many persons who are unable or unwilling to risk their capital in commercial undertakings. It would be unsatisfactory to lock up all our money in a strong box, like the nobleman we read of in *Gil Blas*, or the *Harpagon* of *Molière* ; for, besides that, like these worthies, we should have the discomfort of seeing our means of livelihood daily dwindling away, we should also, like them, be in danger of becoming the victims of some enterprising member of the swell mob. We might, it is true, place it in security with some well-established banker, but still we should have to draw upon the principal for our daily expenses, instead of living on the interest while the principal still remained undiminished. To a certain class of people, then, the public funds are a convenient investment. To invest in them is called “buying in ;” the person investing is called a “stock-holder ;” and when, by selling his stock, *i. e.* portion of stock, to somebody else, he ceases to become a stock-holder, he is said to “sell out.” These two processes, requiring, like all mercantile transactions, a certain amount of experience to conduct them properly, have given rise to two classes, or professions, called stock-jobbers and stock-brokers. The former are generally monied men, and large stock-holders, who are ready at any time to buy or sell,

and realise their profits by a per-centage on the stock bought or sold. Often, however, they are great speculators, and some, through luck, or through their skill in perceiving when the funds were likely to rise in price, and so buying in while they were still low in order to sell when they rose, have acquired enormous wealth. Brokers are a kind of middlemen, who buy of the jobbers for those who wish to buy in, and sell to them for those who wish to sell out. Their profit is a commission, one-eighth per cent, or half-a-crown in every 100*l.* stock. There are certain days appointed for executing such bargains ; they are called settling days. The bargains are made in a building called the "Stock Exchange," and carried into legal execution at the Transfer Office, the Bank, or the South Sea House.

In the early days of our national prosperity, which were also the early days of our national liabilities (for alas ! the richer we have grown the more debts have we contracted), the Royal Exchange—a building founded by the well-known Sir Thomas Gresham in the reign of Queen Elizabeth—had long been the resort of merchants in London for purposes of business. Here might be seen the broad hose of the Fleming or Hollander, the gay doublet of the Venetian, and the flowing robe of the Turk, who, equally with the sober London citizen, sought this common ground in quest of bargains, and were thereby saved many a fruitless journey in the days when streets were narrow and unpaved, and vehicles of public conveyance were a luxury as yet undreamed of. What more natural resort could there be for jobbers and brokers, when they first rose into existence, than a place where money was plentiful and commerce rife ? Accordingly this new race of merchants joined the ranks of their fellow-traders ; and for a time the Royal Exchange resounded with the jargon of a new profession, and the sober and dignified citizen was disturbed from his propriety by the din and wrangling

of the more speculative and volatile stock-broker. The merchants were not slow to show their distaste for the interlopers, who, with an independence of spirit which they have ever manifested, determined, like the colonies of antiquity, to find a home where there were none to browbeat or despise them. In 1698 the jobbers posted themselves in a nest of narrow paved alleys lying between Cornhill and Lombard Street, which hence acquired, and still retains, the name of Change Alley. The City authorities now became alarmed, and issued an order that the brokers should transact their business in the Royal Exchange alone,—but in vain; the brokers followed the jobbers as a cat follows milk, and we have little doubt that the merchants were glad to get rid of them.

The jobbers and brokers remained a long time in their new quarters, and for shelter made use of a coffee-house called "New Jonathan's," which, in 1773, received the name of "Stock Exchange." It is probable that they found our changeable climate unfavourable at times to the transaction of business "al fresco;" and it is on record, that the street being open to all, and the appearance of a stranger causing no surprise or inquiry, purses and pocket-books made mysterious migrations, to the great inconvenience of the original proprietors. But the brokers had another reason for desiring to exclude the public. It was ascertained, by a legal decision in 1767, that anybody might buy and sell stock. Hence the monopoly of their profession was threatened, and the only way to protect it was a general understanding between themselves and the jobbers, who should form one society, and transact all bargains in one place. At the present time the principal rules of the society or profession are as follows:—Every applicant for admission must be recommended by three members of two years' standing, who must give security, each for 300*l.* for two years; every member must be elected by ballot, and

subscribe ten guineas ; no one in business, no clerk, public or private, can be admitted ; a committee is elected annually, consisting of twenty-eight members, who can at pleasure reprimand, suspend, or expel, any member of the Stock Exchange, with the only proviso, that the committee cannot expel unless twelve of their members are present, of whom two-thirds at least must vote for the measure. Finally, stock-brokers may not be partners ; and when any man is expelled from the Stock Exchange his clerk is expelled with him. Such are the rules laid down to secure the integrity and respectability of all members of the society, which, in 1801, raised for itself by private subscriptions the building of which it still makes use, and which is consequently the present Stock Exchange. "New Jonathan's" is deserted ; Change Alley sees no bargains, at any rate out-of-doors, except for apples and pears. The first stone was laid by Mr. W. Hammond, chairman of the Committee of Management ; and beneath it was placed a copperplate with an inscription describing the objects of the building, and stating that in five successive reigns the National Debt had reached the amount of 552,730,924*l*.

Notwithstanding all the endeavours of the society to keep itself select, black sheep do at times get within its pale, as within that of every other profession. There are also "tricks of the trade," which, although not unlawful, are not altogether to be admired ; and there are private tricks which the law cannot reach, or, at any rate, cannot wholly suppress. As good news cause the funds to rise, and bad news cause them to fall, false reports are sometimes spread by the agents of persons who wish to affect the market in either direction. Thus, in 1715, when the unfortunate son of James II. had just escaped to the Continent, a coach-and-six, starting from nobody knows where, closely guarded, and with blinds drawn down, was driven through the parts

where he was supposed to have lain concealed, and thence with all speed towards London. The report flew up to town like wildfire that the Prince was taken prisoner; the funds rose rapidly, and certain persons—no doubt the authors of the stratagem—sold largely, and reaped the benefit of it.

As reports favourable to the national prosperity generally cause the funds to rise, and those of a contrary nature have the opposite effect, it is by no means uncommon for members of the Stock Exchange to speculate by investing largely in hopes of a sudden rise, and many, on the other hand, have been ruined by an unexpected fall. Those who have been too greedy for gain or too apprehensive of misfortune, have sometimes had recourse to the unjustifiable measure of spreading false reports calculated to occasion a change in the direction favourable to their interests. Thus, shortly before the death of Queen Anne, a well-dressed man rode at full speed along the roads, shouting for the turnpikes to be thrown open, and hastily informing everybody, as he hurried by, apparently engaged on some momentous errand, that the Queen was dead. The funds fell, for the succession was uncertain, and the Queen's death consequently was a source of general uneasiness; and one or two jobbers,—among others, one Manasseh Lopez, renowned in the annals of the Stock Exchange,—bought very largely, and made a great deal of money by selling, when, the falsehood of the report being ascertained, the funds naturally rose to their former level.

The last great hoax was of a different kind, its object being (like that respecting the Chevalier de St. George) to raise the funds, not to depress them. In 1814, certain French officers, or rather men disguised in their garb, landing at Dover, a post-chaise was ordered and driven with breathless haste along the London road. Before leaving Dover the travellers had mentioned audibly that Napoleon was dead, and there their mission really ended. Arrived in London, they dismissed their chaise, and doffed their bor-

rowed dress, and threw it into the Thames, from which it was afterwards fished up to complete the evidence against them. In the meantime, the report of the Emperor's death spread from Dover to London. The funds rose very rapidly, and certain persons sold out 826,000*l.*, who had only bought in a short time before. They were suspected, and this time the matter was followed up, and the authors of the hoax were convicted by a jury of their countrymen and by the public voice, the latter in such a case as this the more effectual to punish and to prevent. The principal offenders were not members of the Stock Exchange. Had they been so, we need hardly say that they would have been immediately expelled. As it was, their prospects in life were blasted, and themselves held up to the reprobation of society.

There is a vast amount of speculation carried on which, though it offends against no positive law, is certainly not very much to be commended. This is principally done by time bargains, or buying for account. To buy for account is to purchase stock, without paying for it, at a certain price, with the understanding that the settlement shall take place on a fixed future day. If the funds rise in the meantime, the buyer gains the difference; and if they fall, he loses it. The usual plan is merely to hand over the difference, without any transfer of stock, so that the transaction is really a mere wager on the price of the funds. This foolish practice dates its origin from the time when the Bank books were regularly closed for six weeks before each dividend day. Time bargains were almost a matter of necessity when business for so long a time could not be otherwise transacted. An Act brought forward by Sir John Barnard, in 1732, rendered them illegal; but this did not stop them, since its only effect was to make debts irrecoverable by law. A natural consequence of this law is, that a man who is unable to pay his debts is incapacitated by the customs of the Stock Exchange, from transacting business there for the

future. This may in some cases seem hard, but it is unavoidable, since there is no legal protection. The name of a defaulter is posted; but no assertion to his disparagement is made, so that the legal consequences of a libel are avoided. The form is as follows:—"Anybody transacting business with A. B. is requested to communicate with C. D." Those who buy for account, and consequently wish the funds to rise, are called "bulls;" and those who sell for account, or wish them to fall, are called "bears." Buying for account is, however, sometimes a *bonâ-fide* transaction, undertaken by merchants or others who wish to raise money for some temporary object. A species of conspiracy has sometimes been made between two persons, one of whom has agreed to buy, the other to sell, largely on account. The result is that one is ruined, the other makes his fortune, and the profits are divided afterwards.

When the funds seem to be rising, the price on account may be higher than the present actual price. The price is then said to be higher for time than for money; and in the opposite state of affairs the price is described as lower for time than for money. If it be my interest to put off the appointed time under the former circumstances, I may be allowed to do so by paying the man with whom I deal a sum called "continuation." A sum paid in like manner to put off the delivery of stock when the price is lower for time than for money, is called "backardation!"

When the Government are contracting a new loan, sales of stock may take place before the whole of the loan is actually paid up. In this state the stock is called "scrip."

Lastly, a man who by his own imprudence or by the force of circumstances is disabled from paying his debts, never dares to show his face again on the Stock Exchange; and as he limps away disheartened from the scene of his former triumphs, the poetical imagination of Capel Court describes him as a "lame duck."

M. M.

NOTES ON GREAT PICTURES.

THE "DESCENT FROM THE CROSS," BY RUBENS.

Not very long ago, on the right hand as you entered the south transept of Antwerp Cathedral, was a large and dusky green curtain, behind which was a picture much of the same tone of colour; it was a triptych, a centre-piece protected by two folding wings; on the outer side of which were represented St. Christopher, the attendant hermit, with his lantern, and the owl.

St. Christopher was the patron saint of the Arquebusiers of Antwerp, and this picture was an altar-piece consecrated to him by that Company, now some 240 years since. It was an early work of the most celebrated painter that has yet practised his art in Europe north of the Alps—Peter Paul Rubens. What with the effects, however, of varnishings, restorations, and an unfavourable climate combined, this picture had so much suffered that it was scarcely any longer visible even on the brightest days. The subject of the centre panel was the "Taking down from the Cross;" on one wing was the "Visitation," and on the other, the "Presentation in the Temple." But so imperfectly were these compositions seen, and so little did the picture apparently justify its great world-renown, that the authorities determined, after mature consultation, to suffer it to undergo a thorough cleaning. This operation has been, according to creditable report, completely successful; and the picture is now bright and beautiful.

With the exception of its journey to Paris, and exhibition in the Louvre, in the beginning of this century, the vicissitudes of this celebrated painting have been few, but

an interesting story is attached to the history of its origin. As on former occasions, however, we will endeavour to interest our readers somewhat more in this great picture by premising some account of its remarkable author.

Peter Paul Rubens, though of an Antwerp family, was, by the accident of his birth-place, a German; he was born on the day of St. Peter and St. Paul, June 29, 1577, at Siegen, about fifty miles east of Cologne. He is commonly reported to have been born at Cologne; but recent discoveries have shown that, at the period of his birth, his parents were residing temporarily at Siegen.

He was the sixth child of John Rubens and his wife, Mary Pypeling,—as her history shows, a very superior woman. John Rubens was a doctor of laws of the Sapienza of Rome. He had lived in Italy seven years, and he had been sheriff of Antwerp; but religious troubles forced him to expatriate himself. He died at Cologne in 1587, and his widow then returned to Antwerp, where she succeeded in recovering the confiscated property of the family; and thenceforth devoted herself to the education of her children.

Peter Paul, after receiving the ordinary education of a gentleman, was placed as a page with Margaret de Ligne, widow of the Count de Lalaing; but this was a life that his active mind could not endure, and he, with some difficulty, persuaded his mother to allow him to follow the profession of a painter.

After receiving some instruction from Tobias Verhaagt and Adam Van Oort, he was placed, in 1596, with Otho Van Veen, the most celebrated painter of Antwerp at that period. In the spring of 1600 Rubens visited Italy, and at first Venice, where the brilliant colouring of that school soon engrossed his admiration. He was then himself already an accomplished painter, and was persuaded to enter the service of Vincenzo Gonzaga, duke of Mantua, for whom

he executed several copies and other works; and in 1605 he was sent by that prince on a mission to Philip III., of Spain. When at Madrid he painted several portraits of the Spanish nobility. He returned to Italy; and late in the autumn of 1608 received intelligence of the illness of his mother, whom he had not seen since his first departure from home in 1600; and this intelligence was soon followed by news of her death.

Rubens arrived at Antwerp in January 1609, intending to return to Italy, but the overtures of the Archduke Albert, and Isabella, then governors of the Netherlands, who appointed him their painter with a salary of 500 florins a-year, induced him to remain in the city of his fathers. In the same year, 1609, he married his first wife Isabella Brandt; and in the course of a couple of years he attained such distinction and success, that he found it necessary to build himself a suitable house, in the street now bearing his name.

It was the bounding of the garden of this house that gave rise to the execution of his masterpiece, the "Descent from the Cross," already mentioned. Rubens had purchased the ground of a company of the Antwerp Civic Guard, the Arquebusiers, and in running his wall had enclosed a portion to which he was not entitled; a dispute was the consequence, and an action at law threatened; but as an eminent lawyer and friend of Rubens had shown him that he was in the wrong, he willingly accepted the proposal from the Company of Arquebusiers, that he should paint a picture for their chapel, and all dispute about the few feet of ground should be forgotten.

A contract for the picture was accordingly signed, the subject, St. Christopher. This was in September 1611, and the magnificent altar-piece in question was finished in 1612, and consecrated in its place in 1614; though the

painter was not paid the whole amount due until 1621, when he received the remainder of the stipulated price of 2400 florins; but the worthy citizens had, in the meanwhile, presented the painter's wife with a pair of gloves, of the value of eight florins ten deniers,—according to the accounts published by Gachet.

Rubens has treated his subject with remarkable skill; making in the principal portions of his work only a general allusion to the idea expressed in the Greek name Christopher — *Christ-bearing* or *carrying*. He was, however, required to paint a picture of St. Christopher, and when he showed his work in the first instance to the *Arquebusiers*, they expressed some dissatisfaction at the allegorical nature of the piece, and the necessity of addressing their patron before such emblems, but they were completely satisfied when Rubens closed the two folding wings and showed the figure of the Saint himself, with the Hermit and the Owl on the outer side.

The idea of *Christ-bearing* is thoroughly expressed in each of the three more important compositions: in the "Visitation of the Virgin to Elizabeth," in the "Presentation in the Temple," in which he is held in the arms of St. Simeon, and in the "Deposition," in which he is supported in the arms of St. John, Joseph of Arimathea, and Mary Magdalen.*

It is this centre panel—the actual taking down from the cross—which has acquired its great celebrity for the picture. In the arrangement itself, there is nothing new; the treatment of the same subject by Daniele da Volterra in the fresco of San Luigi dei Francesi, at Rome, is in many respects very similar to that of Rubens. Both are equally dramatic, but there is more ease in the work of the Fleming, which also displays more composure and dignity, and a

* The London Royal Academy of Arts possesses copies of these three subjects.

greater richness of colour ; and it would, doubtless, by most persons, be felt to be a more pleasing composition. The picture, perhaps, strictly belongs to the sensuous school of art ; it is simply five men and three women engaged in taking down the dead body from the cross : two men finely fore-shortened, hanging over the top of the cross, one holding the sheet in his mouth, are among the most prominent figures ; St. John also supporting the body below is more remarkable for his robust character and vigorous attitude, than for any expression of sentiment. The body itself is robust though dead, and everything is picturesque and magnificent. The work has been long popular in this country, from the well-known remarks of Sir Joshua Reynolds, in his notes of a Tour in Flanders and Holland, who also notices its then bad condition :—"It is mortifying to see to what degree it has suffered by cleaning and mending : that brilliant effect, which it undoubtedly once had, is lost in a mist of varnish which appears to be chilled or mildewed. The Christ is in many places retouched, so as to be visible at a distance ; the St. John's head repainted. . . . The greatest peculiarity of this composition is the contrivance of the white sheet, on which the body of Jesus lies . . . none but great colourists can venture to paint pure white linen near flesh ; but such know the advantage of it, . . . and certainly no person knew so well as Rubens how to use it. . . . The Christ I consider as one of the finest figures that ever was invented ; it is most correctly drawn, and I apprehend in an attitude of the utmost difficulty to execute. The hanging of the head on his shoulder, and the falling of the body on one side, gives such an appearance of the heaviness of death, that nothing can exceed it."

The picture, of which there is a fine print by Lucas Vorsterman, engraved in 1620, under the painter's inspection, was painted when Rubens was only five-and-thirty years of

age, and before he had adopted that extraordinary dashing and florid style which now peculiarly distinguishes him; and also before the very great demand for his works made it necessary for him to trust the greater part of their execution to his scholars. At the same time that this picture displays the real magnificence of treatment of his later pictures, it exhibits all the excellence of execution of the more careful works of his earlier career. Some of the portraits which he painted during his long sojourn in Italy, are finished with the utmost care; and all his works show that it was only gradually that Rubens acquired his unrivalled skill and mastery of execution. For he was, again in the words of Sir Joshua, "perhaps the greatest master in the mechanical part of the art, the best workman with his tools, that ever exercised a pencil. This power enabled him to represent whatever he undertook better than any other painter. His animals, particularly lions and horses, are so admirable, that it may be said they were never properly represented but by him. His portraits rank with the best works of the painters who have made that branch of the art the sole business of their lives; the same may be said of his landscapes."

Rubens' fame had shortly after the completion of this work attained its utmost height; he was invited to France, by Maria de' Medici, to decorate her palace of the Luxembourg at Paris, for which he executed a very celebrated series of twenty-one pictures, now in the Louvre. The original sketches were all completed in 1622, and the pictures by 1625; many of the sketches are in the gallery of Munich. As an illustration of Rubens' extraordinary activity, in the same year that he undertook the Medici series, commemorating the marriage of Maria de' Medici and Henry IV. of France, he accepted a commission to paint

thirty-nine pictures for the Jesuits of Antwerp; these last were destroyed by fire in 1718.

In 1626 he had the misfortune to lose his wife, and he took a tour in Holland in that year to divert him in some measure from brooding over his loss. In 1628 he was sent by the Infanta Isabella, then the widow of the Archduke Albert, on a diplomatic mission to Philip IV. of Spain, in order to negotiate a peace between Spain and England; and in the following year, in 1629, he visited England on the same mission, in which he was in both cases completely successful. Peace was signed December 17, 1629. While in England, in 1630, he was knighted by Charles I.,—a rank confirmed to him by Isabella in the Low Countries; he had received also honorary titles from the King of Spain. On both these visits he painted many portraits, and it was during sittings for this purpose that he explained to Charles I. the views of the Spanish monarch.

After his return home, at the close of 1630, Rubens married his second wife, Helen Fourment, a niece of his first wife's and a beautiful girl, only sixteen years of age; by this marriage he had five children. Rubens' income at this time was about 3000*l.* sterling a-year; he lived, though comparatively retired, latterly in great magnificence, and probably in great luxury, for he became at the close of his life a martyr to the gout. He died after an almost unrivalled career of success, on May 30, 1640, possessed of immense wealth; and he was buried with extraordinary pomp in the church of St. Jacques, in which his widow raised a chapel to his memory. It still contains the celebrated family altar-piece, in which Rubens has introduced the Holy Family, St. Bonaventura adoring the infant Christ, St. George and the Dragon, St. Jerome, &c., and a choir of angels; the figures representing portraits of

Rubens and his whole family, that of St. Jerome representing his father, and that of St. George himself. The painter's epitaph was written by his intimate friend, Gaspar Gevarts, commonly called Gevartius, of whom there is an admirable portrait in the National Gallery by Rubens himself, though it is commonly attributed to Vandyck. Gevarts terms him the Apelles of his century and of all ages, and notices his missions to Spain and England and their successful result.

Rubens was possessed of large collections of works of art, which in his last will he ordered to be sold either by public auction or by private sale; and they were sold at a valuation in lots. His collections consisted of pictures, statues, medals, and other curiosities; the portraits of himself and wives were reserved for his children, as well as his own and other drawings for a son who might become a painter, or, such case failing, for a daughter who might marry a celebrated painter; and, in this case failing also, they were to be sold as the other effects.

Regarded as a private gallery, Rubens' collection of pictures was most remarkable. Including ninety-four of his own, it numbered 314 pictures. He showed his partiality for the Venetians. He possessed ten works by Titian, and twenty-one of his own copies after that master; six by Paul Veronese, and six by Tintoretto. An original English catalogue of the collection was privately printed some years ago by Mr. Dawson Turner. These pictures alone sold for 25,000*l.* sterling, and some of the most valuable had been reserved by Rubens' widow, who eventually sold the "Diana at her Bath" to the Duke de Richelieu for 3000 Spanish dollars, then an enormous price. "The Three Graces," another of the reserved pictures, came afterwards into the possession of Charles I.

His widow, still young at Rubens' decease, was after-

wards married to the Baron J. B. Broecheven, a Flemish nobleman in the Spanish service in the Netherlands.

Of all the numerous works of Rubens—and they are counted by thousands—"The Descent from the Cross," here described, is generally considered his master-piece. In the National Gallery are also some of his best pictures; there are few galleries in which he can be better studied or appreciated, though he is, of course, seen to much greater advantage at Antwerp. But, perhaps, the most complete view of his great powers is given by the two apartments in the Pinacothek at Munich, which contain in close proximity ninety-five of his works, and among which are several that are accounted master-pieces. In the National Gallery is a view of his own country-house, the Château de Stein, in which, while at home, he spent the greater part of the year; it is near Mechlin: the winter months he passed in his house at Antwerp.

Rubens established a new epoch of painting in the Low Countries, and for a whole generation the Flemish painters were simple imitators of his vigorous and gorgeous style; remarkable for its brilliancy of colour, freedom of handling, but heaviness of form: of these imitators his own immediate scholars were naturally the most successful. The most celebrated are Vandyck, Van Diepenbeck, Van Hoeck, Van Thulden, Segers, Jordaens, Snyders, Erasmus Quellinus, Van Egmont, &c.

Rubens etched a few plates himself, and there are altogether about 1200 prints after his works. The "Descent from the Cross" has been often engraved, and in various methods. After the plate of Vorsterman, already mentioned, the best are those by Pigeot, Earlom, Valentine Green, and Claessens. There are also several recent lithographs of it.

R. N. W.

PARABLES.

THE GUIDE.

A PARTY of travellers to a great city had a map of the way, but, distrusting it, resolved to take a guide. The road was confessedly difficult and intricate. Several guides offered themselves, who modestly said that they had taken great pains to understand the matter thoroughly, and would do their best to bring them thither safely, offering to show them by the map, as they went along, how the road lay. But these were all thrust aside by one swaggering fellow, who declared that he was an *infallible guide*, and could not possibly mistake the path by day or night. The travellers took him at his word, and "congratulated each other" on getting a man whom they could trust entirely. But, after a while, some of them thought that the road along which he led them had a very suspicious appearance; and on looking at the map, they found that they were on ground which was there laid down as *dangerous*. Thereupon they ventured to remonstrate, but the guide immediately knocked them down; and, turning to the rest, assured them that the things marked on the map as mountains were rivers, and the rocks marshes, and the marshes firm ground, &c.; in short, that they could not understand the map: and, so saying, he put the map in his pocket, and bade them trust to him to guide them according to its *true meaning*. They did so, and "both fell into the ditch."

True it is that in *all* questions where there is a right and a wrong, several different parties cannot be *all* right. When all are forced into agreement or outward submission, what they submit to *may* conceivably be right.—But suppose it is not? Then *all* are in the wrong; and truth and right have no chance at all, to the end of time.

THE CRAZY BRIDGE.

Some years ago, there was a bridge at Bath in so crazy a condition, that cautious persons chose rather to make a long circuit than run the risk of crossing it. One day, however, a very nervous lady, hurrying home to dress for the evening, came suddenly upon the spot without, till that moment, remembering the danger. The sight of the bridge reminded her of its ruinous state, just as she was about to set her foot upon it. But what was she to do? If she went on, the frail arch might give way under her; to go round would be fatiguing, and attended with much loss of time. She stood for some minutes trembling in anxious hesitation; but at last a lucky thought occurred to her—she called for a sedan-chair, and was *carried over* in that conveyance!

You may laugh, perhaps, at this good lady's odd expedient for escaping danger by shutting out the view of it. But is not something of the same kind happening around you every day? Those people, who are alarmed and perplexed at the danger of having to judge for themselves in religious matters, think to escape that danger by choosing to take some guide as an infallible one, and believe or disbelieve as he bids them. What is this but crossing the crazy bridge in a sedan-chair? In determining to believe whatever their Guide affirms, they are in reality choosing to make every single exercise of faith which follows that original determination; and they are choosing to believe him infallible into the bargain. There are at least as many chances of error as before against every single article of faith in the creed which they adopt upon their guide's authority; and there are also additional chances against that authority itself. Thus, in order to get over more safely, they put not only their own weight, but that of the sedan-chair also, upon the tottering arch.

THE LIGHTHOUSE.

A ship was about to sail for a certain harbour, without the captain, who had been usually the commander, but who was then called to serve elsewhere. He came on board to take leave, and to warn the officers and others of the dangerous rocks and shoals which, to his knowledge, beset the entrance; exhorting them to keep a good look-out, and also to inquire carefully into the character of any *pilot* who might offer his services; as some, he was certain, were in league with *wreckers*, and would purposely steer the ship on rocks, that these wretches might plunder the wreck. And if we were told, that all this time there was, *to his knowledge*, a lighthouse erected there as a sure landmark, and a ship *could* not go wrong that did but steer straight for that; should we not at once exclaim that, since *he said not a word of this*, he must be either a fool or a knave? And, on being assured that he was an eminently wise and good man, and thoroughly well-informed, we should say,—“Then this story of the lighthouse must be a fiction.”

And now look at Paul's farewell (Acts, xx. 29-31) to the elders at Miletus. We find him warning them that even from the midst of their own body—“of their ownelves will arise men teaching a perverted gospel to draw away the disciples after them.”

Now, if there *had* been provided by the Most High any such safeguard as we have alluded to, if Paul had known of any order of men, any prelate, any particular church, or general council, designed by Providence as an infallible guide, and a sure remedy against errors and corruptions, would he not have been sure, on such an occasion as this, to have given notice of it to his hearers? If, when he foresaw a perilous navigation for the vessel of the Church, he had known of a safe port, just at hand, and readily accessible, is it credible that he would have never alluded

to it, but have left them exposed to the storms? Would he have been in that case "pure," as he declares he was, "from the blood of all men?" Can any one seriously think, that against the dangers which he had been warning them of, and weeping over, for three years, he knew of a complete safeguard, and yet was so wanting in his duty, so careless of their well-being, as never to make the slightest mention of anything of the kind? To suppose this would be to suppose him destitute not only of all faithfulness in his high office, but of common prudence and rationality.

And yet if any such provision really had been made by the Author of our faith, it is utterly inconceivable that the Apostle Paul should have been—and that too on such an occasion as this—left in utter ignorance of its existence. Whatever may be the precise meaning of our Lord's promise, "Lo, I am with you always, even unto the end of the world," it is at least perfectly clear what it could *not* mean: it could not relate to something either unknown to Paul, or kept back by him from his hearers. All that he knew, and that it was for their benefit to learn, he had, as he solemnly declares, taught to them; and this was no less, he assures them, than "the whole counsel and design of God." "I take you to record this day that I am pure from the blood of all men. For I have not shunned to declare unto you all the counsel of God. Take heed therefore unto yourselves, and to all the flock, over the which the Holy Ghost hath made you overseers, to feed the church of God, which He hath purchased with His own blood. For I know this, that after my departing shall grievous wolves enter in among you, not sparing the flock. Also of your own selves shall men arise, speaking perverse things, to draw away disciples after them. Therefore watch, and remember, that by the space of three years I ceased not to warn every one night and day with tears."

R. W.

TIMES OF REFRESHING.

CHAP. II.

CHURCH-HISTORY, for about a thousand years after the age of the Apostles, is strangely barren. At least it is not fruitful in those events and scenes which (apart altogether from miracles) give such a super-human aspect to Apostolic annals, and which show that the work then done was done by no earthly workman; that the calling out of the Church was directly the result of almighty energy doing battle with all the elements of evil here below; nay, that the Church itself was in very deed the creation of God,—the first forth-putting of the resurrection-power of Him who had taken His place of glory at the Father's right hand.

Not that Church-history has not its folios to speak of. Eusebius leading the way, there were not a few, age after age, who wrote of their own or of past times. But their works are one-sided. They are histories written by the dominant party, with but a small amount of fairness towards those who differed. By this time we ought to have learned how little trust can be given to the statements of the Fathers. We have learned to take their *opinions* at what they are worth; we have yet to learn to take their *narratives* at the same. They have taken singular care to say as much good of themselves, and as much evil of their "adversaries," as possible. Hitherto we have believed them, both in the good and in the evil. The truth is dawning upon many that they are to be trusted in neither, and that Church-history will require to be re-written from the very year in which the inspired record ends. Niebuhr has satisfied most men that in ancient civil history the Romans have hitherto

"had it all their own way;" by which means they have succeeded in "writing up" Rome and "writing down" Carthage most successfully, but most unfairly. We need an ecclesiastical Niebuhr to show that hitherto the Fathers have had it "all their own way;" so that we hardly know anything about the early ages save from such pens as that of Eusebius, who wanted to build up or prop up the hierarchy; or that of Ambrose, who could manufacture pious frauds at pleasure; or that of Chrysostom, who could build his treatise on the Priesthood on a falsehood; or that of Jerome, who had as little scruple in "lying away" the reputation of an adversary as in dipping his pen into his Bethlehem ink-horn to write to his beloved Marcella.

It was not easy in these ages to write or to "publish." That was reserved for those who had the power and the means and the patronage. They who had none of these must be content to suffer wrongs unredressed and slander unreplicated; nay, to have their opinions misrepresented, their characters calumniated, and their names handed down to other times as the promoters of schism or the champions of heresy, when they were but holding fast the earlier faith, and, like Huss or Wicliff or Savonarola, protesting against the assumptions of ecclesiastical lordliness or the inroads of vile idolatry.

The "Fathers" are only the representatives of the dominant ecclesiasticism of the past; and we should as soon take our views of the state of religion in Europe during the last three centuries from Wiseman, or Lingard, or Butler, or Bossuet, as we should gather the state of the Church of Christ in successive times from Bernard, or Cyril, or Cyprian, or Jerome, or even Augustine himself.

These men, and such as they, had the ear of the world, and they made their own use of it. They were clever men, and they made their voice to be heard,—till it was heard

alone,—ringing through East and West,—echoing down the ages,—drowning or silencing every opposing whisper.

Hence we believe that a true Church-history of these times,—such as that in the Acts of the Apostles,—has become almost impossible. "Truth fell in the street" beneath unscrupulous daggers, and in the place where it fell it was buried. There was no man to build its monument. There might be not a few to make lamentation over the fallen and to weep in secret over a desolate Church; but who could write the story of the reviled saints or the bleeding members of Christ's body? Woe be to the man who dared to try it! Some Jerome would arise to browbeat or to slander him, till the good man's fair name was gone, and his testimony for the truth set aside as heresy or foolishness. Buried beneath the obloquy or the contemptuous neglect of men whom a corrupt apostasy has taught us to call "Fathers," the saints of successive generations have died not only unhonoured but unnamed; their story has perished from the earth not to be told till the day of the resurrection of the just.

It is here that the real flaw of all Church-histories lies. They have assumed the "Fathers" as the representatives of the Church of Christ. To write the lives of the Fathers has been reckoned synonymous with writing the history of the Church of Christ! It is strange how little the eyes of the Reformers were opened to this fallacy. They speak of the Fathers very much as Romanists had done before them. They cite their teachings, not indeed as authority but as corroboration; and it is somewhat remarkable that of all the Protestant "Confessions of Faith" the only one that does not quote the Fathers is that of Scotland. It thoroughly "ignores" them. The Madgeburg Centuriators, in their thirteen folios of indiscriminating toil, have drawn all together, good or bad. Venema, in his seven elaborate quartos, little known, but of

high value, has given us an excellent history, but there is the deficiency above noted. Mosheim, in his learned volumes, has greatly missed the mark. So has Milner,—though in another direction;—for his charity has made him set down almost every one as a Christian who could speak or write in a pious strain.* Neander writes with more discrimination and Christian sagacity,—refusing to endorse the accusations of the Fathers against all the heretics hunted down by them; but still too lenient towards the persecutors. Schaff's more recent work has an excellent tone in some respects, but what confidence can one repose in a work which, while protesting against Popery, yet makes that system a necessary stage of Christian development?

The Fathers of the first eight or nine centuries had the whole field to themselves, and all that we know of their opponents is from the page of contemptuous controversy. There are, no doubt, glimpses of light even in the midst of the darkness. But these are few. Yet they increase about the tenth century and onwards. In earlier times the Fathers had enjoyed the unlimited control of history. They had the whole market to themselves. No man could buy or sell who had not their mark. The *suppressio veri* was almost complete for a time. But some ages before the Reformation Patristic censorship was on the wane. Men began to speak and write more boldly,—or rather, we should say, men began to hear and to read what was spoken and written more boldly. Church-history then begins to be what it ought always to have been,—the history of the redeemed

* Let modern smartness,—that admits nothing to be learned save what comes from Germany, or veils itself in a German mist,—say what it pleases, Milner's is really a learned Church-history, if learning be the reading and searching for one's self of every book and document that can subserve one's end. With many, spirituality and learning are deemed incompatible. Thus Joseph Milner has been made to pay the penalty of his piety. Yet he was a scholar and a man of power.

from among men. After the silence of a thousand years we begin to listen to narratives which remind us of the "Acts of the Apostles."

In few of the Fathers do we read aught of such times of refreshing as when the Lord added daily to the Church of such as should be saved, or when three thousand believed and rejoiced. The conversion of souls seems hardly to occupy their thoughts. Even Augustine,—immeasurably their best and greatest,—does not notice this. The building up of a Christian externalism, by sacraments, by priesthood, by what they called the "Catholic faith," is their chief aim. With them this is progress,—this is the right standing of the Church.

Yet we cannot read the story of the ten persecutions, or the touching narrative of the Lyonnese martyrdoms, or of the Numidian persecutions, without feeling that the Spirit of God was in these Churches. The shower was still descending "like rain upon the mown grass," when Tertullian affirmed, "The oftener we are mowed down the thicker we spring up;" and when Origen wrote, "The number of the Christians God has caused continually to increase, and some addition is made to it every day." But there is great difficulty in tracing out anything special regarding the origin of the different Churches, or the way in which the word of the Lord grew and multiplied in each of them.

Our strong impression is that many of the controversies that arose in the Church from the second century and onwards were occasioned by the efforts of good men to rectify the rapidly deteriorating state of religion; and that those whom Church-historians, blindly led by patristic authority, have been in the habit of calling heretics and schismatics, were in reality men quickened to a sense of surrounding evil, and who, though sometimes erring, were yet much nearer the truth than those who sought to crush them. We confess

freely that we have a great desire to know more of these men, to get some insight into their real character and doctrine. It seems likely that they were the head of these small bands of Christians, who, taught of God, have got beyond their contemporaries, though, like the Port-Royalists of France, retaining many of the evils of their education about them. In all ages these men have risen up; and as they did so have been greeted by the churchism of the day with the names of Cathari, or Puritans, or Methodists.

In none of the Fathers do we find "the glad tidings of great joy" which meet us in every page of the inspired histories. Nay, the opposition to the Gospel had, in the third century, risen to such a height, that to maintain it was to ensure persecution at the hands of the Church. It is worse than vain to seek for the living members of Christ among those who ruled in the Church or wrote to uphold her superstitions: we must look for them among the persecuted. We do not say that every man who was assailed as a heretic in these days was truly a man of God; but this we say,—wherever you find such attacks, look well; it is likely that it was the man's honest love of truth, and his resistance to abounding error, that roused the anger of those builders of the Western Babel.

We should greatly like to know more of Novatian in the third century, whose name has been sent down to us by Rome as equivalent to schism and self-will. Neander, chiming in with old usage, sets down his procedure as a "schism." Yet he speaks of him as the "quiet, loving ascetic and divine," and as hurried on against his natural inclination "to contend for what he conceived to be the purity of the Church." He rises up before us like some old prophet, solemnly denouncing the hideous corruptions of the Church, yet unable with his small band to make head against that ecclesiastical tyranny which had planted its

throne in Italy. "The Catholic Church," says he, "transmitted by the succession of bishops, ceases to be truly Catholic, as soon as it becomes stained and desecrated, through the fellowship of unworthy men." One feels that it is not going too far to affirm that whatever of heavenly vitality there was in the Church in these days was among the "schismatic" Novatianists. Rome's policy was to confound the distinction between the visible and the invisible Church, and so to rule without Christ, and without the Spirit, and without the Gospel. Novatian and his brave few, taught out of the Book of God and not by man's traditions, protested against such confusion, and maintained the cause of the living against the dead. They were suppressed. The attempt to reform failed. The spirit was quenched, and Rome quietly reseated itself in its old paganism, under a Christian nomenclature, having at length succeeded in throwing off as an incubus the last relics, if not of Apostolic *faith*, at least of Apostolic *life*.

We have a great desire to know the real opinions of the Priscillianists, to whom the worthless Damasus of Rome, and the unscrupulous Ambrose of Milan, denied a hearing, and who suffered sorely for their doctrines in an age when to be dissatisfied with the regnant ritualism of high places was to be a heretic. They might be wrong ; but their persecutors were more so.

We have a still greater desire to know more of Apollinaris in the fourth century. He was evidently a man that loved his Bible, and sought the mind of God in it. But he clung to it too closely for his own safety and honour in the Church. He was hated, reviled, misrepresented. At the worst, even according to the showing of his enemies, it was jealousy respecting encroachments on the Supreme Godhead of his Lord, that led to some expressions on which his adversaries founded the charge of heresy. He was the poet

of the Church and the scholar of the age,—yet, withal, a man of godly life and simple faith. But no excellency could save him. He had offended the priesthood; his name must be branded; even his hymns must perish, so that posterity may know him only as a heretic. Athanasius and Basil did the work of hunting him down.

We want to know more of Jovinian too. He was abused by Ambrose and by Jerome; condemned by the Roman Church, and banished to the lonely rock of Boa, there to expiate his heresies by death. Yet, what were his heresies? His chief one was, that “the man who lived according to Christ’s Gospel in the circle of domestic and social life was a better man than the solitary ascetic!” He wanted men to live as Christ lived, and as His Apostles lived. For this cause it was that Jerome poured out his wicked slanders against him, and that the dominant Church condemned him. Yet who can doubt that it was for the truth that he contended and died?

God did not leave Himself without witnesses in these ages. The cloud was still spreading out its skirts over thee arth. Drops were falling in some places, showers in others. The word of God was not bound. The glad tidings went on their way from land to land. The Spirit of God carried salvation to thousands. Would that we had a fuller record of His work. Would that some one would at least glean out the true from the false, and that we might have a history, however brief, of the *living* as well as of the dead,—a record not of those whom Rome has canonised, but of those whom God has written in the Lamb’s Book of Life.

H. B.

100



The Syrian Lion. (*Felis Leo*.)

THE LION.

(*Felis Leo.*)

THIS redoubtable animal is not only at the head of the formidable order *Carnivora*, but has, by common consent, been regarded from the earliest ages as the king of the forest. Its appearance is familiar, especially in our land, where it has for many ages been the national emblem, with its figure emblazoned on our standards, moulded on our coins, and stamped on our public documents. From living specimens till a late period kept as an appendage of royalty, and from its frequent occurrence in menageries and zoological gardens, almost every child knows that the lion is a cat-like quadruped of a tawny yellow colour, and that there is no foundation for its being figured in all the colours of the rainbow on the signs of inns and on the shields of ancient families, except in the fancy of the painter or the secret meaning of the herald.

The lion has acquired its distinguished position, not only from its stately bearing, its great strength, and its tremendous powers of destruction, but from ideas popularly held, that, in this monarch of beasts, we have the portraiture of "might unmingled with ferocity, of courage undebased by guile, of dignity tempered with grace, and ennobled by generosity." It is in vain that nearly all travellers record that the royal beast is as treacherous as any cat, and that except when roused by hunger or brought to bay he sneaks away like a coward. "He may possess," says Mr. Methuen,* "the most noble qualities of any of the feline race, but it is a race distinguished by ferocity, craft, revenge, impatience, not by generosity." "There is something truly regal and magni-

* *Life in the Wilderness*, p. 82.

ficient in his port, his flashing eye, and shaggy mane, but '*fronti nulla fides.*'" The traveller has often to record that when suddenly roused the lion runs off as timidly as a buck; and that he is a stealthy, cunning brute, who never attacks unless he has the advantage, and, relying on his great strength, feels sure of the victory.

The lion is admirably organised and armed for the purposes of his life; and possesses in the large canine teeth and sharply-pointed molars the most suitable dentition for the laceration of animal food. His very tongue is rough with elevated papillæ, the points of which are directed backwards, so that with this organ he can remove every particle of muscle from the bones of his victim. So rough is the tongue, that the lick of a lion has been known to abrade the skin of the human hand. The claws, which are five on the fore-feet and four on the hind, are long, and hard, and hooked; they are retractile, within a sheath, which is enclosed in the skin which covers the end of the paws. The muscles which move and hold back these claws are very complicated, and afford a beautiful and very evident instance of adaptive design; for in no other way could these useful organs have the sharpness of their edge and the fineness of their point preserved.

The male lion is distinguished in his adult state by a shaggy mane, which contributes much to his nobleness of look. The mane varies in colour according to his age. Mr. Cumming says* that he attains it in his third year; at first it is of a yellowish colour; in the prime of life it is blackest; and when the monarch has numbered many years, but is still in the full enjoyment of his power, it assumes a yellowish grey colour, a kind of mixture as it were of pepper and salt. These old lions are ever deemed the most dangerous. The female has no trace of a mane, and is

* Hunter's Life in S. Africa, i. p. 195.

covered with a short, thick, glossy coat of tawny hair. The tawny colour of the lion's skin is a great protection to him, rendering him perfectly invisible in the dark, and in the day-time, from its sandy or stone colour, concealing him well from observation and distinction. Mr. Cumming has often heard lions lapping the water loudly under his very nose without being able to make out so much as the outline of their forms. This traveller observed, too, the unwillingness of lions to visit fountains when the moon was bright. If that luminary rises early, the lions deferred drinking till a very late hour in the morning; while, if it rose late, they drank at a very early hour in the night. The lion is strictly nocturnal in its habits; during the day his usual place of concealment is some low bushy tree or wide-spreading bush, either in the forest or on the mountain-side. He also frequents jungly spots, where there are lofty reeds, or fields of long, rank, yellow grass, among which he lies concealed during the heat and glare of the tropical sun.

The cubs for some time after their birth are obscurely banded with black; and on the head and limbs there are several spots of a similar darkish hue, so that the young by their marking show some affinity both to the tiger and to the leopard, animals closely allied to the lion and belonging to the same natural family.

The lion, though a pigmy compared with the giraffe, can dash this lofty animal to the ground, and in a short time is able to overcome him. He is a constant attendant on the great herds of buffaloes which wander among the vast forests of the interior of Africa; and so long as his teeth are uninjured, a full-grown lion generally proves a match for an old bull-buffalo, an animal which much exceeds in size and strength the largest breed of English cattle. He also preys on the numerous species of antelope, watching for them as they come to drink. It is but very seldom that the lion

ventures to attack man, though it has been said, that when once he has tasted human blood he acquires a special relish for it. The degraded Bushmen sometimes fall a prey to his ferocity, and they are said occasionally to expose the aged and the infirm, so that they fall into his clutches. The skin of the lion serves as a mantle and a bed to the chiefs of many of the African tribes, while his flesh is occasionally eaten by them. Dr. Shaw has recorded that in North Africa the flesh of the lion was held in great esteem, and that it had no small affinity with veal, resembling it both in colour, taste, and flavour. Mr. Darwin* when in South America tried the flesh of the puma, or South American lion, and found it very white and remarkably like veal in taste, so that he thinks Dr. Shaw's statement well worthy of credit.

Travellers have remarked that,† "contrary to prevailing notions, there is nothing very grand or loud in this animal's voice while prowling at night." Its growl consists of a thick, suppressed, panting roar, expressive of great impatience. Mr. Methuen well observes that were this "royal beast" to be very vociferous, he would have but small chance of filling his stomach. When lions approach very near their purr may be distinguished, and it is impossible to describe the sensations of awe and fear produced by this sound breaking the silence of night in a dreary wilderness. Oxen and horses tremble with fright, and seem perfectly aware of the dangerous proximity of this dread beast. The poet Campbell, who visited North Africa, refers to the strangeness of the delight of the imagination in objects linked with danger, death, and pain.

" And my heart beat with joy when first I heard
A lion's roar come down the Libyan wind,
Across yon long, wide, lonely inland lake."

* Researches during the Voyage of the Beagle, p. 135.

† Methuen's "Life in the Wilderness," p. 111.

Dr. Burchell, in whose "African Travels" are many particulars of the lion, tells us that on stormy nights this beast is always most active. It would seem that most animals are thrown into confusion by thunder and lightning, and on such nights the lion does not fail to take every advantage of the war of the elements. He can then spring with greater certainty on an antelope or quagga, as their powers of escape seem to be paralysed by the storm. We may mention that the lion seems to be particularly attached to the flesh of the quagga, so that where travellers fall in with great numbers of these fine species of the horse family, the close neighbourhood of the lion may be safely inferred.

Mr. Gordon Cumming's work abounds with anecdotes of this beast, in encountering which the adventurous author was generally very successful. On one occasion, by laying down a large antelope as a bait, a magnificent old black-maned lion was attracted to the carcass, and having dragged the weighty body for some distance, a shot from the steady hand of our African Nimrod brought down the poacher. Mr. Cumming thus enthusiastically describes his victim, which was killed by a ball traversing the length and breadth of his body: "I lighted a fire, and gazed with delight upon his lovely mane, his massive arms, his sharp yellow nails, his hard and terrible head, his immense and powerful teeth, his perfect beauty and symmetry throughout; and I felt that I had won the noblest prize that this wide world could yield to a sportsman." It must be a noble sight to see, as our traveller did, six large lions, attended by those valets of leonine majesty, a group of hyenas and a still larger band of jackals, feasting at once on some recently-killed carcasses of the rhinoceros. Lions do not refuse to feast upon animals not killed by themselves. Mr. Cumming repeatedly found lions of all ages feasting on game, quadrupeds which he had shot; and we know with what gusto the lions in the Regent's

Park devour their portion of beef at four o'clock, on every "lawful" afternoon.

The father of the young man who accompanied Mr. Steedman in his travels in Africa was celebrated for his exploits in lion-hunting. On one occasion the son came unexpectedly on a lion, and fired, but missed his aim; the infuriated beast rushed on him and knocked him down. The father witnessed the disaster from a distance, ran to his son's assistance, and levelling his piece, fired at the beast as it lay growling over its victim, whom it seemed to press closer to the earth, as if fearful of losing its prey. The ball went through the animal's head, and caused it to roll over; after a few struggles it expired close to the body of the young man, who, to the inexpressible joy of his parent, had sustained no serious injury, although some time elapsed before he recovered from the shock he had received. On Mr. Steedman's remarking to the father that it was a surprising deliverance, "Yes!" he emphatically replied, "God was there!"*

Lions were at one time far from scarce in the Holy Land, as we learn from several passages of Scripture. When passing through the vineyards of Timnath, "a young lion roared against" Samson, and was killed by him. (Judges, xiv. 5, 6.) David was well acquainted with this king of beasts (1 Sam. xvii. 34), and not unfrequently in the Psalms alludes to it (Ps. vii. 17-22), especially referring to its nocturnal habits in Psalm civ. 20-22. "Thou makest darkness, and it is night; wherein all the beasts of the forest do creep forth. The young lions roar after their prey, and seek their meat from God. The sun ariseth, they gather themselves together, and lay them down in their dens." David had, doubtless, become familiar with their habits when feeding his father's flock, and when a wanderer

* Steedman's "Wanderings and Adventures," i. 178.

fleeing from the face of Saul. The disobedient prophet was slain by a lion, "which met him by the way." (1 Kings, xiii. 24.) In the neighbourhood of the cities of Samaria, when inhabited by deportations of the King of Assyria, lions abounded (2 Kings, xvii. 25, 26); while Jeremiah, prophesying more than a hundred years after, compares an enemy "to a lion from the swelling of Jordan." (Jer. xlix. 19.) The Jordan in its swellings still lodges sedge and driftwood high up on the branches of overhanging trees, and overflows the lower plain,* but the lion seems to have been long since destroyed from its jungles. De Saulcy, however, who visited the Dead Sea in 1850 and 1851, remarked on the sandy soil some recent and very distinct marks of an animal much larger than the panther; and felt convinced that, although he did not see the king of beasts, the lion had not yet entirely disappeared from the deserts of Judea.†

The lion is often alluded to in the Bible, especially by the prophets, who derive many comparisons from it. Among these may be particularised the references of Nahum to its habits (Nahum, ii. 11, 12), evidently derived from close observation of its nature on the banks of the Euphrates. In these regions this royal beast has been long a formidable inhabitant. Nimrod, the "mighty hunter before the Lord," pursued there this grisly tyrant. In the British Museum some of the most interesting slabs, deposited by Dr. Layard, contain most vivid representations of the pursuit of the lion by some descendant of Nimrod. He is accompanied by his courtiers, who drive the wounded animals to his chariot to receive their death-stroke from the monarch's hand. One of the lions is in a most infuriated state, and lashes about its tail, at the end of which is a very conspicuous prickle, with which the ancients believed that the beast roused its

* Lynch's "Narrative of United States Expedition," p. 132.

† Journey round the Dead Sea, i. 248

latent ire. In many of the other sculptures from Assyria the lion is represented, and it seems to have formed one of the most frequent and expressive emblems employed in that most ancient kingdom. A figure with the body and limbs of a lion, the head of a man, and the wings of an eagle, and similar to one of the four beasts of Daniel's vision (Dan. vii. 4), frequently occurs in these sculptures, and seems to be symbolical of strength, wisdom, and swiftness.

Lions are still far from rare on the banks of rivers of Mesopotamia. Dr. Layard frequently saw these animals, and his party almost daily found traces of their footsteps amongst the ruins of Niffer.

When Dr. Layard was at Hillah, a Turkish official there gave him two lions. One of these was nearly of full size, and was well known in the town, for it had been allowed to wander about the bazaars and streets. Many of the shops had no attractions for him, but in the stalls of the butchers he found wherewith to satisfy his hunger, and so without leave asked he quietly took possession of one, and remained till his appetite was satiated. This lion waited also the arrival of the fishermen's large wicker-boats, and in spite of the opposition of the owners, helped himself to a kind of large barbel, for which he appeared to have a decided relish. Dr. Layard remarks, that for these acts of depredation the Pasha was rather to be blamed than the king of beasts, as the former decidedly encouraged a mode of obtaining daily aliment, "which, although of questionable honesty, relieved him from butchers' bills." The lion, when his appetite was gratified, would quietly stretch himself in the sun, and allow the Arab boys to take great liberties with him.* This variety of lion has not the dark shaggy manes of the African breed.

The memory of the escape of a London merchant from

* Nineveh and Babylon, p. 487.

a lion has been kept up annually for upwards of two hundred years. A sermon is preached every year on the 16th of October in the church of St. Catherine Cree, Leadenhall Street, to commemorate the deliverance of Sir John Gayer. This gentleman, who was Lord Mayor in 1643, when returning from a successful voyage, was shipwrecked on the coast of Africa. In his distress he perceived a lion making towards him: he immediately fell on his knees and prayed for deliverance, declaring solemnly, that if the Almighty would please to keep him from the mouth of the lion, he would, on his return to London, evince his gratitude, and endeavour, to the end of his life, to inculcate reliances upon Divine Providence in the worst extremes of human wretchedness. The good Providence of God protected him, for the lion passed without molesting him. He soon after descried a vessel, and reached his native land. Not forgetful of his vow, he hastened to fulfil it, and immediately on his arrival placed the sum of 200*l.* in trust, the interest of which was to be given in bread to the poor of the parish of St. Catherine for ever; he left also twenty shillings to be paid to the minister who should preach a sermon commemorative of his escape on every succeeding 16th of October. The money left, unlike many other somewhat similar bequests, has been strictly applied to the object for which it was designed by the grateful parishioner.*

A. W.

* Dr. Hughson's "London," vol. ii. p. 177.

LIFE, IN ITS INTERMEDIATE FORMS.

No. II.

INSECTA.

WE have now to do with a host of creatures, which, though of minute dimensions, are sufficiently conspicuous in many aspects to have been objects of popular interest in all ages. We find no longer the soft gelatinous bodies, sluggish habits, and indeterminate forms, which have so generally characterised the races through which we have passed ; but active and agile animals, of firm and solid parts, furnished with well-appointed limbs, liberally endowed with organs of sense, in full variety and perfection, and displaying a versatility of instinct, and a measure of intelligence, that would scarcely be surpassed by the noblest of the brute creation. The mailed and powerful Beetle, the soaring Butterfly, the predaceous Dragon-fly, the industrious Bee, the sagacious Ant,—are representatives of the Class of INSECTS.

The unparalleled number of species included in this division, and the consequent abundance and variety which exist in the details of structure and habits, render it difficult to give anything like a popular view of the whole Class within reasonable limits. Probably above 150,000 *species* of Insects exist in the cabinets of European collections ; by which word “species” we mean animals as distinct from each other as the Rat from the Mouse, or the Blackbird from the Thrush ; races of animals, each of which has descended from an original first parent, created distinct and separate at the beginning of the world.

Insects are composed of rings, or annular segments, like the ANNELIDA ; and a caterpillar, which is an immature

butterfly or moth, is much like a worm ; but in the full-grown Insect we see a manifest condensation of form, the segments being generally compacted together, except at two points, where division is very manifest. Thus, if we look at a Wasp, we see that it is distinctly divided into three portions, the head, the trunk (*thorax*), and the body (*abdomen*) ; separated by constrictions so deep as nearly to cut off the mutual connexion of these parts. All perfect or full-grown Insects show the same divisions, though not commonly so strongly marked. The appellations "Insecta," and "Entoma" (whence *entomology*), have been hence given to the Class, these Latin and Greek terms signifying "cut into."

The perfection which is bestowed on the organs of sense in these animals, especially when we consider their minuteness, is calculated to fill us with adoring admiration of the skill of "the Great Workmaster." Take an example from the *eyes*, which are of several kinds, evidently designed for distinct modes of vision, of which we, who have but one sort of eyes, can form no adequate notion. The Bee and many other Insects have on the crown of the head a number, usually three, of simple glassy eyes, set like "bull's-eyes" in a ship's deck ; and besides these a great compound eye on each side, consisting of a multitude of lenses aggregated together upon the same optic nerve. The microscope reveals to us that the compound eye of an Ant contains fifty lenses ; that of a Fly, four thousand ; that of a Dragon-fly, twelve thousand ; that of a Butterfly, seventeen thousand ; and that of a species of *Mordella* (a kind of beetle), the amazing number of twenty-five thousand. Every one of these regular, polished, and many-sided lenses, is the external surface of a distinct eye, furnished with its own iris, and pupil, and a perfect nervous apparatus. It will thus be seen that each hexagonal facet forms a transparent horny lens, immediately

behind which is a layer of pigment diminishing to a point in the centre, where it forms a pupil; that behind this a long six-sided prism, answering to the crystalline and vitreous humours in the human eye, extends, diminishing to its lower extremity, where it rests upon the retina, or net-work expansion of the optic nerve. Some of the minuter details of this exquisite organisation are still matters of conflicting opinion; but these we omit, as our purpose is rather to convey to our readers a general idea of the structure of this complex organ of vision. "This also cometh forth from the Lord of Hosts, which is wonderful in counsel, and excellent in working." (Isa. xxviii. 29).

With scarcely an exception, the animals of the previous Classes are confined to the waters; the density of such a medium being requisite for the support of their soft and feeble bodies. But the solid external investiture of Insects, and their well-jointed limbs, impart to them sufficient firmness and precision of motion to range the earth and air; many species being endowed with organs which enable them to swim, run, or fly at their pleasure. Professor Owen thus eloquently speaks of the various powers of these indefatigable little creatures:—

"Some traverse the surface of the earth with a succession of steps too swift for definition; some by leaps so extraordinary as to have excited the powers of the dynamical calculator from the earliest periods. The waters also have their insect population, some swiftly cleaving the clear element, some gyrating on the surface, while others creep along the bottom. Nor are the activities of the aquatic insect confined to that lower sphere. The *Nepa*, or the *Dytiscus*, at the same time, may possess its organs of creeping, of burrowing, and of flight; thus, like Milton's fiend, it is qualified for different elements, and

' ——— Through strait, rough, dense, or rare,
 With head, hands, wings, or feet, pursues its way,
 And swims, or sinks, or wades, or creeps, or flies.' " *

The muscular strength of Insects is immense. We once were surprised by a feat performed by a common Beetle (*Oryctes maimon*) in the United States. We had put the insect, for want of any box at hand, beneath a quart bottle full of milk upon a table, the hollow at the bottom allowing him room to stand upright. Presently, to our surprise, the bottle began slowly to move and glide along the smooth table, propelled by the muscular power of the imprisoned insect, and continued for some time to perambulate the surface, to the astonishment of all who witnessed it. The weight of the bottle and its contents could not have been less than three pounds and a half; while that of the beetle was about half an ounce, so that it readily moved a weight 112 times exceeding its own. A better notion than figures can convey will be obtained of this feat by supposing a lad of fifteen to be imprisoned under the great bell of St. Paul's, which weighs 12,000 lbs., and to move it to and fro upon a smooth pavement by pushing within.

Mr. Newport has given other instances of insect-power equally remarkable. Having once fastened a small kind of *Carabus*, an elegantly formed Ground Beetle, weighing $3\frac{1}{2}$ grains, by a silk thread, to a piece of paper, he laid a weight on the latter. At a distance of ten inches from its load, the insect was able to drag after it, up an inclined plane of twenty-five degrees, very nearly eighty-five grains; but when placed on a plane of five degrees' inclination, it drew after it one hundred and twenty-five grains, exclusive of the friction to be overcome in moving its load, as though a man were to drag up a hill of similar inclination a waggon

* Comp. Anat. i. 213.

weighing two tons and a half, having first taken the wheels off.

According to the same excellent authority, the Stag Beetle (*Lucanus cervus*) has been known to gnaw a hole an inch in diameter through the side of an iron canister in which it was confined, and on which the marks of its jaws were distinctly visible, as proved by Mr. Stephens, who exhibited the canister at one of the meetings of the Entomological Society.

Let us look at the powers of Insects exercised in the act of flying. The House-flies (*Musca domestica*), that wheel and play beneath the ceiling for hours together, ordinarily move at the rate of about five feet per second; but, if excited to speed, they can dart along through thirty-five feet in the same brief space of time. Now in this period, as Kirby and Spence observe, "a race-horse could clear only ninety feet, which is at the rate of more than a mile in a minute. Our little fly, in her swiftest flight, will in the same space of time, go more than one-third of a mile. Now compare the immense difference of the size of the two animals (ten millions of the fly would hardly counterpoise one racer), and how wonderful will the velocity of this minute creature appear! Did the fly equal the race-horse in size, and retain its present powers in the ratio of its magnitude, it would traverse the globe with the rapidity of lightning."* Some of the flies that haunt our gardens shoot along so rapidly that the eye cannot follow them in flight.

Nor are these tiny creatures less masters of the arts of running and leaping. De Lisle mentions a fly so minute as almost to be invisible, which ran nearly six inches in a second, and in that space was calculated to have made one thousand and eighty steps? This, according to the calculation of Kirby and Spence, is as if a man whose steps

* Introd. to Entomology.

measured only two feet, should run at the incredible rate of twenty miles in a minute.

Every one has had occasion to observe, not always without an emotion of anger, the leaping powers of the Flea (*Pulex irritans*). A bound of two hundred times its own length is a common feat; as if a man should jump twelve hundred feet, or a quarter of a mile! What a pity that Insects were not allowed to be competitors in the athletic games of old!

With regard to their organisation, all Insects in the mature state are armed with three pairs of legs; which are divided into several parts, as, the hip, the thigh, the shank, and the foot, by distinct hinge-joints: the foot itself (*tarsus*) consists of several jointed pieces, and is usually terminated by two hooks, and often furnished with adhesive pads, or other organs accessory to locomotion. In most of the tribes there are also wings, two pairs in general (but in one extensive Order the hinder pair is obliterated); each of these organs consists of two films of highly elastic membrane, stretched over a frame-work of strong tubes, as the silk of an umbrella is expanded over its ribs. In the Order *Coleoptera* (Beetles) the fore pair are thick, leathery, and opaque, chiefly serving as shields to protect the hind pair in repose; and in some other Orders they are somewhat coriaceous; while in the beautiful *Lepidoptera* (Butterflies), the transparency of both pairs is concealed by a covering of minute feather-like scales, overlapping each other, reflecting various colours, and arranged in a mosaic of inimitable beauty.

The power of these organs, so delicate and filmy in appearance, we have before alluded to, but it may be illustrated by another anecdote. Leeuwenhoek has recorded a remarkable instance, in which he was an eye-witness of the comparative capabilities of the Dragon-fly and the Swallow, as relates to the perfection of their flight. The bird and the insect were both confined in a menagerie about a hun-

dred feet long ; and apparently their powers were fairly tested. The swallow was in full pursuit, but the insect flew with such astonishing velocity, that this bird of rapid flight and ready evolution was unable to overtake and entrap it ; the insect eluding every attempt, and being generally six feet before it.

The organs of the mouth vary much in form and function in different insects. In a Beetle they consist of two pairs of jaws, generally hooked and toothed, working horizontally, and an upper and an under lip, closing the mouth above and below. Each lower jaw bears one or two filaments, consisting of several joints ; and a similar pair is affixed to the lower lip. These filaments are called *palpi*, and are supposed to be highly endowed organs of touch. They greatly resemble the *antennæ*, or horns of many joints, which project from the front of the head ; but these latter are considered to be organs of hearing.

If we look at a Gnat piercing our hand with its blood-sucking tube, or a Butterfly pumping up the nectar of a flower through its spiral tongue, or a Fly dissolving grains of sugar with the fleshy lips of its proboscis, we shall not very readily allow them any analogy with the apparatus of jaws and lips which we have just described. Yet great as is the dissimilarity, it is now established, that all these forms of mouth are but modifications of the same model, adapting it to different functions. The sheath, horny and tubular in the Gnat, soft and muscular in the Fly, is the lower lip ; the piercing lancets in the former are the jaws, which are inconspicuous in the latter. The elegant coiled spire of the Butterfly consists of two tubes, which are the lower jaws, greatly lengthened ; and the labial palpi, stout and hairy, stand up on each side of them : the other essential parts can be detected only by the skill of the anatomist.

Some of the most interesting of the phenomena which

occur in the economy of Insects, are the transformations which they exhibit in their progress of growth ; the changes of their form being frequently so great, that it would be impossible, but for the testimony of experience, to avoid the conclusion that the same insect, in infancy, youth, and adult age, belonged to widely distinct and remote orders of existence. We shall hope to enter into some details of this interesting subject in our next paper. P. H. G.

REVIEW OF THE MONTH.

CONSIDERING the numbers whose happiness is involved, the war in China is more important than even the Crimean campaign ; and we confess that the latest accounts have caused us much anxiety. Every generous sympathy was with a nation throwing off the yoke of ancient oppression, and, if left to themselves, no one feared for the eventual success of the Chinese people. And although, as will always happen in any popular movement, a few fanatics or intriguers might be mixed up with it, there can be no doubt that the good greatly predominated over the evil. The morality of the insurgent camp has been unprecedented ; the Decalogue has been adopted as their ethical code ; and to the Holy Scriptures has been assigned a marked supremacy as the class-book of education, and the text-book of public instruction. Any one who knows the present state of China and the history of the Manchoo dynasty, so corrupt, oppressive, and exclusive, must join Bishop Smith and Dr. Medhurst in wishing success to the Tæ-ping rebellion. But there is too much reason to fear that the resurrection of

China will be arrested by European intervention. The insurgents are iconoclasts, and, it is said, at the instigation of the Jesuits, who regard the movement as a sort of Chinese Protestantism, the French authorities at Shanghae have already taken the side of the Imperialists. On the other hand, the prohibition of opium among the insurgents has led our British traders to fear that their craft is in danger, and they deprecate a revolution which would cut off the millions of dollars now paid for this drug. The British plenipotentiary, Sir John Bowring, has always looked with indifference, if not hostility, on Christian missions; and it is now confidently stated that, along with the representatives of France and America, he has resolved to take advantage of the present weakness of the Manchoo dynasty to extort the free navigation of the Yang-tse-kiang, offering in return the united resources of the three powers to put down the Tae-ping movement. Coming from a quarter so well informed as the "Friend of India," we can scarcely doubt the correctness of the statement; but that Protestant Christendom should be committed to a crusade on the rising liberties of China, and that British cannon should be employed in forcing on a reluctant people a cruel Tartar despotism, are results at which the British people may well be indignant; but they are results too likely to be realised if Britain is still to be represented in China by the minister to whom our honour and our interests are at this moment intrusted.

American journals contain many curious particulars from the lately published census of the United States, taken in 1850. The States then contained 23,191,876 inhabitants, being only 4,319,571 less than the united population of Great Britain and Ireland. Of the above, 3,204,313 are slaves. The number of children attending school was 4,089,507. There were of the free population adults,

upwards of twenty years of age, 1,053,420 who could not read nor write. Of "libraries other than private" there were 15,615, containing 4,636,411 volumes. Of newspapers and periodicals there were 2526, issuing annually 426,409,978 copies. Of these 254 were daily papers, with an average circulation of nearly a million copies each per annum. In round numbers the States contained 27,000 clergymen, 24,000 lawyers, and 41,000 physicians and surgeons. The live-stock included 4,336,719 horses, and 6,385,094 milch-cows.

In the beginning of last May, Her Majesty's Government sent out the *Pleiad* steamer to explore, if possible, the "Benneh," or "Mother of Waters," a copious river half-a-mile wide and nine feet deep, which the lamented Dr. Barth discovered in his African travels on the 18th of June, 1851. The *Pleiad*, under the command of Dr. W. B. Baikie, R.N., steamed up the Niger Delta in the beginning of July, and ascended the Chadda 250 miles farther than it had been ascended before,—in fact, till within fifty miles of the point where Dr. Barth had struck upon it and crossed it under the name of the "Benneh" three years before. The expedition returned in safety to Fernando Po on the 7th of November. During the 118 days which they spent in the river there was little sickness, and not a single death occurred in a party of 66 persons. In addition to the precautions employed, this happy result is ascribed to the voyage having commenced at the season when the water was rising; and every friend of Africa must rejoice in an achievement which opens the way so far into the interior.

Amongst the new books which have fallen in our way, we especially welcome "Detached Thoughts and Apophthegms extracted from some of the writings of Archbishop

Whateley." There are few seekers of truth so fearless as the great logician, and few who look at things with an eye so single,—consequently few who see them in an aspect so fresh and striking. Hence it comes that no writer of the present day is so suggestive. This little manual, the compilation of some like-minded disciple, contains scores of sentences, the expansion and enforcement of any one of which would be itself a volume; and we doubt not that many a useful discourse and treatise will be produced by the dilution and skilful seasoning of this book-essence. Miss Farmer has provided for readers young and old a very interesting account of "Tonga and the Friendly Islands." It is the monograph of a missionary field, carefully surveyed and described in a clear, lively, and engaging style. And knowing that those who do the most for pagans at the antipodes are the people who have the greatest compassion for the heathen at home, we would recommend as a companion to the above Miss Barber's "Sorrows of the Streets," a series of London tales, authentic, brief, and touching. Dr. Morgan, of Belfast, under the title of "The Penitent," has given us an edifying and eminently practical exposition of the fifty-first Psalm. "The Message of Christianity" is a series of eloquent and affectionate lectures addressed to large audiences of working men, by the Rev. W. Landels, of Birmingham. There are few towns in the empire for whose industrious classes greater effort has lately been made; and we hope in a future number to give our readers some account of the plans which have been most successfully tried.

NIGHT VIEWS FROM MY WINDOW.

LUNAR SCENERY.

CONJECTURE is of course vain as to the past history of our satellite, which our conclusion respecting her seas or plains would suggest. Yet the thought, in spite of all we can do, sets the imagination on fire, and adds a deep and intense interest to the study of the lunar surface and the exploration of her wondrous regions, with the nature and topography of which we are becoming daily more familiar; and from which, by patient and close observation of each astronomer upon his favourite spot, we may at length fairly expect to arrive at a combined and accumulative testimony respecting her condition, and, as the geologist with his hammer, so the astronomer with his telescope, to reap a rich harvest of discovery. At all events, with such an idea as has been, not without very good reason, thrown out by Professor Phillips,* no man can henceforth examine those vast and dreary tracts of lunar desert with the telescope without having his powers of observation and investigation quickened—whether it be to refute or confirm the theory; while the bare possibility of the moon's being a world deserted by its waters, adds an inexpressible interest to the subject. Was that mysterious globe, then, ever a miniature world analogous to our own, and fitted as a habitation for animal existence, for material intelligence? Was it ever an independent planet (*i. e.* independent of the earth)? Was

* Professor Ponzi, an eminent Italian geologist and astronomer, agrees with Professor Phillips in the opinion that water and ocean once existed upon the moon in those vast basins and reservoirs that seem so well fitted to contain them.

there ever a period when, as one of the family of the asteroids (some of which, indeed, are much smaller), it pursued its annual journey round the sun in a different orbit, unlinked to its earthly companion? Did clouds and an atmosphere once envelope it, and forests and savannas cover it? Was there a time when the rushing sound of waters broke the present stillness of its shores and the silence of its ravines? Did the torrent ever leap from the bosom of its dark mountains, and, flowing on in thundering cataracts, make its way through the deep channels, we can so readily perceive, widening as they go, till they empty themselves into the capacious bosoms of its seas, or now desert plains? Did strange fish sport in its ocean depths, now untenanted,—strange birds sing in the branches of lunar woods, now no more? Did the breeze play over its meadows, once enamelled with green and spangled with wild flowers? Did the streamlets sparkle through its sunlit valleys, and the many voices of animal creation, as here, break forth to enliven its solitudes? Above all, did the lungs of an Intelligent Being ever breathe its lost atmosphere, or give expression to a thought in audible accents in that now soundless place? Was hope or fear, joy or sorrow, ever known in that globe, whose calm and silent face now proclaims a world whose former glory has passed away, and the records of its history and its inhabitants (if it had any) alike perished, and the memory of the bright scenes associated with them forgotten? Was the former condition of our satellite succeeded (as, doubtless, was the case here) by a series of fearful cataclysms, which reduced the lunar garden to a desert? And at length did the Almighty hand that made her drag her from her ancient course in the heavens, changing all her axial and annual movements, placing her as a brilliant, but dreary and silent, rock, to give light to man? Did her oceans, at that dread moment, retire to the fountains of the lunar

depths from which they came, and the volcanoes rend her surface, leaving only the grand outlines of her features, still beautiful in their ruins, for man to gaze upon, and for the rest a chaos and a desert in place of a smiling world? Then did the clouds, which once screened her from the solar heat, and the atmosphere, which preserved life, alike depart together with her waters, and thus render her more suitable, in her secondary position and uninhabited state, as a servant and a lamp to an inhabited world? All these, and many more such reflections, are irresistibly suggested by the sound of a single wave, introduced upon that solitary plain at which we are still gazing so earnestly : questions, it is true, not to be answered by man *here* or *now*, but which may be hereafter speculations in which, at all events, we may indulge without fear of the charge of irrationality, and which are not without profit as well as interest. What if, after the great fiery cataclysm which as Christians we believe shall one day rend our own beautiful planet and deform its fair face, dry up its mighty rivers and seas, burn up its forests, and throw down its mountains, as so graphically described by the Apostle,—what, if a different state of things should be reserved for our satellite as well as ourselves? Were an angel to look on the habitation of man immediately after “that great and terrible day,” when the smoke of the terrestrial conflagration had cleared off, and the surface was again perceptible, would he recognise in the charred and blasted desert he beheld a single trace of the beauteous scenes that now adorn it? No; it is evident that the present desolation of our satellite would be a fitting representation of that burnt-up earth. But “we look (says St. Peter) for a new heaven and a new earth:” the word that made and then destroyed can as easily restore. Another revolution, or rather new creation; takes place, and the earth is once more a paradise. And where is her nightly

attendant? In a new heavens may she, too, not shine; herself a new earth, and, like the earth, having undergone as complete a restoration? If the remarkable words of Isaiah and John are to be taken literally,* there is, at least, a mysterious hint of a different kind of illumination upon earth from any we have yet experienced,—an illumination in which our moon shall not have her part as formerly; but, in any case, whether interpreted literally or not, even should she preserve her appointed place and movements in our sky for ever, the argument from analogy still remains; and the speculation is neither irrational nor improbable that geological revolutions, which have so frequently changed the aspect and surface of our planet, may yet (as they have evidently done in past ages), by the Divine power and wisdom, change and wonderfully transform the present aspect and condition of our satellite, imparting to her a new phase of beauty and glory which she has never yet experienced or exhibited.

But in the meantime let us examine the surface of the Mare Imbrium somewhat more closely; for the water-theory, however interesting, is met by certain appearances which have suggested one of quite a different character, and which hitherto has had, and indeed still has, by far the most numerous as well as strenuous supporters.

The first objects that catch the eye, then, scattered somewhat sparingly over the surface of this mysterious tract of desert, are,—besides a few grand and solitary mountains, whose giant peaks are cast in deep shadow upon it,—what constitutes the great and characteristic peculiarity of lunar scenery, viz., its ring-mountains, or craters, as they are called, or wall-surrounded plains: different names have been given to these formations, but they are all evidently of the same origin, the only difference being their size and depth. They are, one and all, to the telescopic view circular pits,

* Isa. lx. 19; Rev. xxi. 23.

varying from a mere hole in the crust of the moon to the enormous dimensions of 150 miles in diameter. The perfectly circular form which they assume seems to be maintained with little variation throughout the whole class ; although in many other particulars they differ considerably. The general characteristic of these formations is,—a circular ridge of rock or mountain elevated above the general surface of the moon, enclosing a plain, or a pit, or chasm, as the case may be, generally below the external surface ; in the centre of which, or out of the depths of which, rises a conical-shaped mountain, which occasionally, but very rarely, has a crater on its own top. The exceptions to this are circular plains or pits thus encompassed, but without any central mountains, or with many mountains scattered over the interior plain ; or in a few cases with a ridge or chain of mountains running across the diameter, either the whole or part of the way ; or sometimes, as in Tycho, a number of concentric ridges proceeding one within the other towards the centre. This formation,—which, in some parts of the moon, such as the southern districts, constitutes the entire surface, presenting the appearance (so closely are they crowded together) of the cells of a honeycomb,—is the most remarkable feature which strikes the beholder who for the first time presents his eye to the telescope directed to the moon. If we could only tell the cause of this formation, we should, doubtless, have the key to the lunar history ; we should know, at least, all the important part of her story ; even as it is, it tells a strange, wild tale of ruin,—of fearful chaos,—which, it is plain, is not owing to the action of water ; if water had a part in forming these craters, it was only as an assistant to volcanic action, such as is seen on earth, and possibly in the same way. Certain it is that water alone never threw up from the lunar surface those tremendous craters, any more than water elevated the Alps, or the Andes, or the

Himalayas of earth. Whether it had not a part in denuding them, and thus exposing them to view, however, is not so certain. The usual way of accounting for these strange formations, and, indeed, the hitherto almost unquestioned theory respecting them, has been that of terrestrial volcanoes, with which they have been considered identical; and as some few instances of similar formations are found upon the earth, together with a few discoveries by Sir William Herschel and others of bright objects in the moon thought to be volcanoes absolutely in action, the theory has never been questioned,* and people have set them down accordingly as volcanoes, and the moon as a volcanic rock still active. That this theory is correct in the main, *i.e.*, in so far as regards the past history of our satellite, few, I think, will be disposed to deny; that the grand and terrible revolutions perceptible upon that globe have been chiefly igneous, caused by subterranean fire, or molten matter ejected from her bosom, is sufficiently plain: that part of the theory, however, which considers the moon as a still active volcano, and at the present time actually casting forth her fiery matter, as from terrestrial mountains, is, I think, more than questionable. Notwithstanding the high authority of Sir William^o Herschel and others of less repute, the very rapid advance of improvement in telescopes,

* Professor Phillips remarks that the perfectly circular form becomes less apparent as the magnifying power of the telescope is increased. This is no doubt the case, but is merely the inevitable effect of approximation, particularly when the object is of large magnitude. Viewed at a distance, you perceive the entire shape or configuration (and it may be added, the *true* form,) at one glance; but on approaching it closely this vanishes, and the view becomes *local*, being confined to a particular and small range of vision, while objects before unperceived swell into importance, and the *coup d'œil* of the entire is lost. Any one familiar with mountain scenery will have remarked this on comparing the shape of a lake as seen from the summit of a mountain and that afforded by a view of it from its margin,—the latter gives a false, the former the true picture of its shape.

and the immensely increased number of quick-sighted observers, have rendered it, if not impossible, at least highly improbable, that any changes whatever are actively in progress upon the surface of the moon. The luminous appearances, which undoubtedly have been seen by the great astronomer mentioned, have been accounted for in other ways much more satisfactory, while the theory never has received the slightest confirmation from the observers of the present generation. The precise position, indeed, of the luminous volcano of Herschel, pointed out by himself, has been ascertained, and under similar circumstances any telescopic observer may see it, as I have myself,* resembling very much indeed, it must be acknowledged to an inexperienced observer, a volcano in action, but yet from other testimony connected with its appearance, as evidently *not*, and resulting from some permanent but highly reflective substance, of which the tops of many of the mountains seem to be composed, and which seen through the undulating movement of our terrestrial atmosphere under high telescopic power, give all the appearances described; a circumstance not the less creditable to the first discoverer, and calculated to show the extreme accuracy and closeness of his observations.

But what are we, then, to conclude from our observations respecting these strange objects, some of which I shall describe more particularly just now?

Their volcanic activity must have been universal and on a tremendous scale, with which nothing on earth now has apparently a parallel. If they owe their formation to volcanic fire, and if we find them volcanic vents (as we do), of all sizes, scattered over the selenic plains, how came they there? Was their formation subsequent to, or preceding, the presence of water, if water there ever was? Upon this subject possibly

* The particular mountain alluded to is Aristarchus.

a comparison with analogous cases upon the earth may throw some light; if, for instance, the Pacific of our globe were suddenly dried, we should probably see formations not unlike these lunar craters. The isles of the Pacific are most of them but the tops of submarine volcanoes; the remarkable crater of Kirawee in the island of Owhyhee (that island itself a volcanic mountain) is another example of this. Other islands have suddenly risen from the deep in that ocean, forced up by the same tremendous agency. We can have little difficulty, therefore, I think in imagining a similar case in the moon once, and that these vast and dreary plains are but dried-up lunar Pacifics of former ages, over which water once rolled, but laying bare to view now the double action of both fire and water, both long since,—for incalculable ages, indeed, we may believe—extinguished, vanished, and quiet. Two things we undoubtedly might expect to find were this the case, viz. traces of watery as well as fiery action. The latter is at once presented by the volcanoes themselves: nothing else could have formed these objects; the former has yet to be fully ascertained and confirmed by observation, although it is true Professor Phillips thinks he has discovered decided traces of diluvial action on the shapes of many of the craters. There is here, indeed, a consideration which I would suggest as important to be attended to in searching for these traces of watery action, viz. that upon such a theory we should only expect to find them in connexion with those craters which lie on those desert tracts over which the ocean may be supposed to have rolled, but not in the highlands of the moon, or those more convulsed portions of her features, where earthquakes shook her to her centre and all but tore her seemingly to fragments; here we may expect to find only what we actually do, viz. evident traces of that terrible fiery action which once swept *over* her and thundered *through* her.

But here, upon this hypothesis, we are brought to a stand-still in amazement at the awful extent and grandeur of the action that once disturbed the placid face of our smiling attendant; we are even disposed to question the identity of the causes which made one crater (if it may be so called) of 120 or 150 miles diameter, and another 50, or another only a few yards; and we recur at once to our own globe for a solution of the question. Is there, we say, anything at all like this with which we are acquainted upon earth, and which may be ascribed to igneous action? Nothing, it would appear, has ever occurred upon so grand a scale since man's short history commenced;* but a close attention and observation of terrestrial features, and particularly geological investigation of the history of our globe, give, I think, sufficiently distinct intimation of subterranean agency (we should, perhaps, rather call it igneous, plutonic, or cosmical), upon, as might be expected in so much larger a globe, a far grander scale.

The vegetation with which God has so beneficently and beautifully clothed our planet, in order to render it a fit residence for man, hides not a little of the terrific agency that has been at work here before man was created. The various sedimentary deposits forming the present geological strata or stratified rocks of the earth perform the same office. But let any one who has a head for geology, and an eye for geologic observation, and a vivid imagination to conceive it, walk through any country, and he will have as little difficulty as a skilful anatomist would have in demonstrating the interior of the human body in stripping earth of her clothing, and presenting to view the grand and terrible

* It will be seen that throughout this paper the writer has preferred to follow the theory of Von Buch, Sir R. Murchison, and others of the same geological school, to those of Sir Charles Lyell, with reference to the sudden or gradual operation of igneous or cosmical forces.

outlines and primitive features of nature which are hid from the eyes of "the mass;" and which, as each successive garment is removed, down to earth's granite ribs or skeleton, presents the working of an Almighty hand on a scale which even now, in its dead and silent and peaceful majesty, fills the mind with awe to contemplate, and causes the heart to turn with grateful emotion to the kind Providence that did not permit us to enter the world to be spectators of scenes before which, to use the words of God Himself, "the spirit He had created would fail," and the "souls He had made" expire from terror.

The objection, therefore, which suggests itself to the mind, from the consideration of the vast size of some of the lunar craters, and the grandeur of the operations necessary to create them, against the theory of their common and simultaneous origin, may safely be dismissed by a glance at the geological history of our own globe. But to what are we, then, to ascribe the tremendous forces thus brought into activity in either case? It is evident, in order to understand the nature of either lunar or terrestrial forces, or the formations which are the result of them, we must go deeper than the surface, and further back than any epoch connected with humanity. In order to understand lunar volcanoes, or form even a probable guess at what they are by comparison with those of the earth, we must not look to the comparatively small and slight exhibitions of those phenomena now active here, nor even those whose fires are now extinct or silent, but yet which have had a comparatively recent existence: but we must look beyond even the geological or sedimentary eras to the grander and more primitive cosmical agencies, which seem never to have slumbered since the creation, but have continued to display their terrible fiery potency throughout all ages of our earth's history—forcing their way up, and mingling themselves successively with all

strata, from the lowest Silurian upwards even to the very present hour, though it would seem now with diminished, or at least restrained, power, but presenting in all a striking analogical representation of the subterranean energies that have probably made the moon what she is. Thus viewed we shall have little difficulty in believing, even when we fail to realise, the extent and grandeur of the terrible catastrophes that have alike torn from their foundations the solid framework of the planet we inhabit and the calm and brilliant bosom of the attendant that enlightens us. The result of such an investigation will, I am sure, be that which is at all events the deliberate conviction of my own mind, that the agencies which have been at work in both planets *are*, or at least *have been*, *identical*.

In confirmation of this opinion, Humboldt says,* "We must regard directly the greater part of the wall-surrounded plains and annular mountains as craters of elevation *without continuous phenomena of eruption*, in the sense of Leopold Von Buch's 'Geological Hypothesis.'" This carries us back at once to the very formation of both the planets, or their common igneous origin, when from a state of fusion they gradually cooled down, the interior acting by reaction upon the outer crust or surface in producing those annular formations for which the moon is remarkable; and which, like those of the earth, are connected with what Mr. Nasmyth terms an expiring phenomenon;† only in the

* Humboldt's "Cosmos," part ii. vol. iii. page 336.

† The opinions of that eminent practical astronomer upon this subject are given in a letter to the Rev. J. Crampton, author of the "The Lunar World," in the appendix to that work (page 101); likewise in some very remarkable and interesting papers, read by him at different meetings of the Royal Astronomical Society, where he gives the result of a careful analysis of the law of the rate of cooling of the planets, which appears to be dependent upon the square and cube of the diameter of the planet. The effect will be, as he states in his letter to Mr. Crampton, that "the

case of our satellite, which would cool more rapidly, that cause has ceased entirely, while the earth still continues, but less destructively and frequently, to pour forth from her volcanic mouths the comparatively diminutive streams of melted rock, that indicate a planet as yet uncooled, and a fire as yet unquenched; and though only restrained by the Almighty hand for the present, doomed, as I think, after one more terrible expenditure of its fury (2 Pet. iii. 10), to be, if not finally extinguished, at least confined within the nucleus for ever after. That a very different state of things once existed here (and *that* in a comparatively recent geological period),—a state of things, too, in no slight degree resembling what we now perceive upon the surface of the moon,—we have the strongest evidence of from the great basin of the Pacific already referred to.

The area of that ocean covered by its basaltic islands alone (*i. e.* of decided igneous origin) is sixteen thousand square miles. These islands (says Mr. Cheever*) are of all shapes and periods of construction, from the simple volcanic dome or cone scarcely at all abraded or disintegrated, to irregular mountain heights, having vast craters with deep gorges between lofty peaks, abrupt precipices, and sharp saddle-ridges of basalt, lava, clinker, scorix, volcanic sand, and *débris* some more and others less recent. These volcanic traces extend throughout Polynesia, and clearly show that in ages back all that vast ocean must have been the bed of an indefinite number of volcanoes submarine or subaerial. Besides innumerable subordinate side-vents, it is computed (in the geology of the United States Exploring moon, from its small mass and proportionally great surface, must have cooled down vastly more rapidly than the earth, and all have been dead, tranquil, and silent, for countless ages ere we had passed through our own rampant volcanic era, of which our most tremendous modern volcanoes are but mole-hills in comparison."

* Cheever's "Island World of the Pacific."

Squadron), from all craters now visible, that there could not have been less than *one thousand volcanoes, in violent, probably simultaneous action*, from the Hawaiian Islands to New Zealand. What a terrific page is here unfolded in the past history of the earth ! How few that sail upon the calm bosom of that ocean, whose name bespeaks at least its general character, smiling, as it does, in the tropical verdure of its sunny isles, whose green and velvet herbage seems to float upon the deep blue of its transparent wave,—where plantains, bananas, and palm-groves, reflected in the crystal waters that surround them, seem to picture a paradise like that of Eden, and a repose like that of Heaven :—how few are enabled to cast the eye of their mind backward and downward to the hell that once gleamed and flamed with its thousand mouths of fire far below ; or in imagination, hear the muttered subterranean thunder, that rolled and shook the buried continent beneath, whose actual surface we are enabled to feel with the sounding-line in our hand, just dropped some thousand fathoms over the vessel's side, as we float on the peaceful water ! And yet it is no wild dream we are relating, no nightmare of the imagination, which the morning sunshine can dispel : it is a reality as certain in the strange history of our globe, as any of the best known and most familiar events which Hume or Macaulay has recorded in the history of our country.

J. C.

•
(To be continued.)

THE TIGER-WOLF.

(*Thylacinus cynocephalus*.)

THE great order, or rather division, of mammalia, the *Marsupialia*,* is furnished with a pouch, into which the young are received and nourished at a very early period of their existence. The first species of the group, known to voyagers and naturalists, was the celebrated opossum of North America, whose instinctive care to defend itself from danger causes it to feign the appearance of death. As the great continent of Australia became known, it was found that the great mass of its mammalia, from the gigantic kangaroo to the pigmy, mouse-like potoroo, belonged to this singular order. The order contains a most anomalous set of animals, some being exclusively carnivorous, some chiefly subsisting on insects, while others browse on grass; and many live on fruits and leaves, which they climb trees to procure; a smaller portion subsisting on roots, for which they burrow in the ground. The gentle and deer-faced kangaroo belongs to this order; the curious bandicoots, the tree-frequenting phalangers and petauri, the savage "native devil,"† and the voracious subject of this notice.

The "Tiger-wolf" is a native of Van Diemen's Land, and is strictly confined to that island. It was first described in the ninth volume of the "Linnean Transactions," under the name of *Didelphis cynocephalus*, or "dog-headed opossum," the English name being an exact translation of its Latin one. Its non-prehensile tail, peculiar feet, and different

* So called from the Latin word *marsupium*, a pouch.

† *Diabolus ursinus*, the ursine opossum of Van Diemen's Land, a great destroyer of young lambs.



The Tasmanian Wolf. (*Thylacinus Cynocephalus*.)

arrangement of teeth, pointed out to naturalists that it entered into a genus distinct from the American opossums; and to this genus the name of *Thylacinus** has been applied; its specific name *cynocephalus* being still retained in conformity with zoological nomenclature, although M. Temminck, the founder of the genus, honoured the species with the name of its first describer, and called it *Thylacinus Harrisii*.

Mr. Gould has given a short account of this quadruped in his great work "The Mammals of Australia," accompanied with two plates, one showing the head of the male, of the natural size, in such a point of view as to exhibit the applicability of one of the names applied to it by the colonists, that of "zebra-wolf." He justly remarks that it must be regarded as by far the most formidable of all the marsupial animals, as it certainly is the most savage indigenous quadruped belonging to the Australian continent. Although it is too feeble to make a successful attack on man, it commits great havoc among the smaller quadrupeds of the country; and to the settler it is a great object of dread, as his poultry and other domestic animals are never safe from its attacks. His sheep are, especially, an object of the colonist's anxious care, as he can house his poultry, and thus secure them from the prowler; but his flocks, wandering about over the country, are liable to be attacked at night by the Tiger-wolf, whose habits are strictly nocturnal. Mr. Gunn has seen some so large and powerful that a number of dogs would not face one of them. It has become an object with the settler to destroy every specimen he can fall in with, so that it is much rarer than it was at the time Mr. Harris, its first describer, wrote its history, at least in the cultivated districts. Much, however, of Van Diemen's Land is still in

* From the Greek words for a pouch and a dog, *θύλακος* and *κύων*. Dr. Gray had previously named it *Peracyon*, from *πύρα*, a bag, and *κύων*, a dog.

a state of nature, and as large tracts of forest-land remain yet uncleared, there is abundance of covert for it still in the more remote parts of the colony, and it is even now often seen at Woolnoth and among the Hampshire Hills. In such places it feeds on the smaller species of kangaroos and other marsupials,—bandicoots, and kangaroo-rats, while even the prickly-covered echidna—a much more formidable mouthful than any hedgehog—supplies the Tiger-wolf with a portion of its sustenance. The specimen described by Mr. Harris was caught in a trap baited with the flesh of the kangaroo. When opened, the remains of a half-digested echidna* were found in its stomach.

The Tiger-wolf has a certain amount of daintiness in its appetite when in a state of nature. From the observations of Mr. Gunn it would seem that nothing will induce it to prey on the Wombat, † a fat, sluggish, marsupial quadruped, abundant in the districts which it frequents, and whose flesh would seem to be very edible, seeing that it lives on fruits and roots. No sooner, however, was the sheep introduced than the Tiger-wolf began to attack the flocks, and has ever since shown a most unmistakeable appetite for mutton, preferring the flesh of that most useful and easily mastered quadruped to that of any kangaroo however venison-like, or bandicoot however savoury. The colonists of Van Diemen's land have applied various names to this animal, according as its resemblance to other ferocious quadrupeds of different climates struck their fancy. The names of "Tiger," "Hyena," and "Zebra-wolf," are partly acquired

* *Echidna aculeata*, or *E. hystrix*, the porcupine ant-eater, a curious edentate, spine-covered quadruped, closely allied to the still stranger *Ornithorhynchus*, the duck-bill.

† *Phascolomys Vombatus*, a curious, broad-backed, and large-headed marsupial, two specimens of which are in the Zoological Gardens. It is a burrower, and in the teeth it resembles the rodent animals; hence its name, from *φάσκαλον*, a pouch, and *μῦς*, a mouse.

from its ferocity, somewhat corresponding with that of these well-known carnivorous denizens of other lands, and partly from the black bands which commence behind the shoulders, and which extend in length on the haunches, and resemble, in some faint measure, those on the barred tyrant of the Indian jungles, and the other somewhat similarly ornamented mammalia implied in the names. These bars are well relieved by the general greyish brown colour of the fur, which is somewhat woolly in its texture, from each of the hairs of which it is composed being waved.

The specimens in the Zoological Gardens are very shy and restless ; when alarmed they dash and leap about their dens and utter a short guttural cry somewhat resembling a bark. This shyness is partly to be attributed to their imperfect vision by day, and partly to their resemblance in character to the wolf, whose treachery and suspicious manners in confinement must have struck every one who has gazed on this "gaunt savage" in his den in the Regent's Park. The specimens exhibited are the first living members of the species brought to Europe. The male was taken in November 1849, and the female at an earlier period in the same year, on the upper part of St. Patrick's River, about thirty miles N.E. of Launceston. After being gradually accustomed to confinement by Mr. Gunn, they were shipped for this country, and reached the Gardens in the spring of 1850. It is very seldom, indeed, that they are caught alive ; and when so caught they are generally at once killed, so that it was with some difficulty, and by offering a considerable pecuniary inducement to the shepherds, that they were at last secured for the Zoological Society.* In their den they show great activity, and can bound upwards nearly to the roof of the place where they are confined. A. W.

* Mitchell's "Popular Guide to the Zoological Gardens," p. 9 (1852).

ENGLISH LETTER-WRITERS.

LADY MARY WORTLEY MONTAGU.

LADY MARY PIERREPOINT was the daughter of Evelyn, Earl of Kingston, afterwards Marquis of Dorchester, and, later still, Duke of Kingston. She was born in 1690. She had the misfortune to lose her mother in 1694: this lady was first cousin to the father of Henry Fielding, the novelist.

Lord Kingston was a heartless and selfish fine gentleman. While his daughter was a bright and pretty little child, he petted and was proud of her. But when she began to grow up to maidenhood, he neglected her; and when she had reached maturity, he tyrannised over her.

But her education was good. From early years she was a diligent student. She had a rare aptitude for languages. When very young she knew Greek; she was well acquainted with French, Italian, and German, and she taught herself Latin. Bishop Burnet revised a translation which she made from Epictetus before she was twenty.

She also loved poetry, and she read the "light literature" of the day. To us the folios of laborious and dreary fiction which our ancestors used, queerly enough, to read for amusement, would be simply impracticable. The tediousness of those tales is amazing. But she knew them well. The days of skimming had not come; and she criticised the puppets who were called heroes and heroines, and who alternately mouthed and maundered through the tiresome scenes. Thus read, those romances, though in themselves as barren as a sea-beach, may not have done her mind much harm. She really studied them; and the very act of

studying, whatever the subject may be, helps to mature the mind ; for, as has been often said, the Thinker takes more to a book than can be got from it.

But, morally, there can be no doubt of the pernicious effect which this trumpery had upon her. She learned to believe in the cold and high-flown sentimentalities of the Clelias and Climenes, the Astræas and Cassandras,—or she acted, very early, as if she believed in them. Her father's conduct was, no doubt, arbitrary—but hers was unfilial. He was heartless—but she was unmaidenly.

The story can be briefly told. Mr. Wortley Montagu—a gentleman of moderate abilities and considerable fortune—met her at what we should call a literary *matinée*, and was struck by her beauty and wit. Through his sister, at whose house they met, he commenced a correspondence with her, to which she seemed to have little diffidence in replying. His expressions became ardent : she was wonderfully cool throughout for a young lady of twenty, and in fact coquetted with him. But at last he made proposals for her hand to her father.

Lord Dorchester received his offers graciously, and all was well until the question of settlements was discussed. But then there was a rupture. Mr. Montagu refused to entail his property ; the haughty lord insisted that he should ; both were firm, and the negotiations were ended. Her father told Lady Mary what had happened, and announced that he had chosen a more suitable husband for her. She professed to give her consent ; but, in the meanwhile, continued to correspond with her first lover, and at last clandestinely left her father's roof in August 1712, and married Mr. Montagu.

To such a history there could only be one conclusion. Retribution was deferred, but it was inevitable. Mr. Montagu seems to have been a plain, stolid, good-natured sort of

man ; she was all brilliancy, coldness, and wit. These elements might mix in the solution of society, but they could never combine ; above all, serenity and peace of mind must have been altogether wanting on one side, if not on both. For two years after the elopement they lived in retirement ; but in 1714 she re-entered the great world, and, by reason of her wit and beauty, became a star of the first magnitude in the dull and sombre court of George I. In 1716 Mr. Montagu was appointed ambassador to the Sublime Porte, and, accompanied by his wife, repaired to Constantinople. It was at this time that she wrote her celebrated Oriental letters to some of the ladies of the English court and to Alexander Pope—her greatest literary friend then, and for some time afterwards, but ultimately her unscrupulous enemy and “the wicked wasp of Twickenham.”

At Constantinople she learned Turkish, and in some of her letters she even gives translations from the popular poetry of that difficult tongue. But her disposition was not, we think, poetical. She was more like Fielding than Pope ; or, as we should now say, more like Thackeray than Tennyson. Her descriptions of scenery and society, of places and people are far more interesting than her versions of the bards of Stamboul.

Probably the main element of her success as a sketcher was her coolness—or, to use a more descriptive term, her want of heart and sympathy. She looked on life as on a show, where the main element was variety ; but where she herself liked sometimes to appear, and, when she did do so, to be applauded. And it is to this coldness of temperament, we suspect, that we owe the introduction of inoculation for small-pox into England, which is plainly traceable to her : none but a woman of great clearness of head and calmness of disposition could have tried such a process upon her own and only boy.

The following extract on the subject, from a letter dated Adrianople, April 1, 1717, will be found interesting :—

“Apropos of distempers, I am going to tell you a thing that will make you wish yourself here. The small-pox, so fatal and so general amongst us, is here entirely harmless by the invention of *ingrafting*, which is the term they give it. There is a set of old women who make it their business to perform the operation every autumn, in the month of September, when the great heat is abated. People send to one another to know if any of their family has a mind to have the small-pox; they make parties for this purpose, and when they are met (commonly fifteen or sixteen together), the old woman comes with a nutshell full of the matter of the best sort of small-pox, and asks what vein you please to have opened. She immediately rips open that you offer to her with a large needle (which gives you no more pain than a common scratch), and puts into the vein as much matter as can lie upon the head of her needle, and after that, binds up the little wound with a hollow bit of shell, and in this manner opens four or five veins The children or young patients play together all the rest of the day, and are in perfect health to the eighth. Then the fever begins to seize them, and they keep their beds two days, very seldom three Every year thousands undergo this operation; and the French ambassador says pleasantly that they take the small-pox here by way of diversion, as they take the waters in other countries. There is no example of any one that has died in it; and you may believe I am well satisfied of the safety of this experiment, since I intend to try it on my dear little son.

“I am patriot enough to take pains to bring this useful invention into fashion in England; and I should not fail to write to some of our doctors very particularly about it, if I knew any of them that I thought had virtue enough to destroy such a considerable branch of their revenue for the good of mankind. But that distemper is too beneficial to them not to expose to all their resentment the hardy wight that should undertake to put an end to it. Perhaps, if I live to return, I may, however, have courage to war with them.”

She did live, and had the courage. As Lord Wharncliffe says among his Anecdotes, nobody is now aware what an arduous and thankless enterprise it was. “Those who have heard her applauded for it ever since they were born, and have also seen how joyfully vaccination was welcomed

in their own days, may naturally conclude that when once the experiment had been made, and had proved successful, she could have nothing to do but to sit down triumphant and receive the blessings and thanks of her countrymen. But it was far otherwise. The clamours raised against the practice, and of course against her, were beyond belief. The faculty all rose in arms to a man, foretelling failure and the most disastrous consequences; the clergy descanted from their pulpits on the impiety of thus seeking to take events out of the hands of Providence; the common people were taught to hoot at her as an unnatural mother, who had risked the lives of her own children." But she triumphed. She had tried it on her boy at Belgrade; she exhibited it on her daughter in England before four physicians deputed by Government; and at last she had the gratification of seeing the practice universally adopted.

As we have given one extract from these Eastern letters, we may take one or two other passages from them here before speaking further of her life.

"I am now sitting," she says to Mrs. Thistlethwayte, writing from Pera, "this present fourth of January, with the windows open, enjoying the warm shine of the sun, while you are freezing over a sad sea-coal fire; and my chamber is set out with carnations, roses, and jonquils, fresh from my garden. I am charmed with many points of the Turkish law—to our shame be it spoken, better designed and better executed than ours—particularly the punishment of convicted liars (triumphant criminals in our country); they are burnt in the forehead with a hot iron, when they are proved the authors of any notorious falsehoods. How many white foreheads should we see disfigured; how many fine gentlemen would be forced to wear their wigs as low as their eyebrows, were this law in practice with us!"

At Adrianople she dined with the Grand Vizier's lady, the widow of the Emperor Mustapha II. After giving an account of her reception, she proceeds to describe another visit which she paid directly afterwards:—

"The Greek lady with me earnestly solicited me to visit the *Kiyâya's*

lady, saying, he was the second officer in the empire. I had found so little diversion in the Vizier's harem, that I had no mind to go into another. But her importunity prevailed with me, and I am extremely glad I was so complaisant.

"All things here were with quite another air than at the Grand Vizier's; and the very house confessed the difference between an old devotee and a young beauty. It was nicely clean and magnificent. I was met at the door by two black eunuchs, who led me through a long gallery between two ranks of beautiful young girls, with their hair finely plaited, almost hanging to their feet, all dressed in fine light damasks brocaded with silver, into a large room or rather pavilion, built round with gilded sashes, which were most of them thrown up, and the trees planted near them gave an agreeable shade which hindered the sun from being troublesome. The jessamines and honeysuckles that twisted round their trunks shed a soft perfume, increased by a white marble fountain playing sweet water in the lower part of the room, which fell into three or four basins with a pleasing sound. The roof was painted with all sorts of flowers, falling out of gilded baskets, that seemed tumbling down. On a sofa, raised three steps, and covered with fine Persian carpets, sat the *Kiyaya's* lady, leaning on cushions of white satin, embroidered; and at her feet sat two young girls about twelve years old, lovely as angels, dressed perfectly rich, and almost covered with jewels. But they were hardly seen near the fair *Fatima* (for that is her name), so much her beauty effaced everything I have seen,—nay, all that has been called lovely, either in England or Germany. I must own that I never saw anything so gloriously beautiful, nor can I recollect a face that would have been taken notice of near hers. She stood up to receive me, saluting me after their fashion, putting her hand to her heart with a sweetness full of majesty. She ordered cushions to be given me, and took care to place me in the corner, which is the place of honour. I confess though the Greek lady had given me a great opinion of her beauty, I was so struck with admiration that I could not for some time speak to her, being wholly taken up with gazing. To say all, in a word, our most celebrated English beauties would vanish near her.

"She was dressed in a caftán of gold brocade, flowered with silver, very well fitted to her shape, with a waistcoat green and silver, her slippers white satin, finely embroidered; her lovely arms adorned with bracelets of diamonds; upon her head a rich Turkish handkerchief of pink and silver, her own fine black hair hanging a great length in various tresses, and on one side of her head some bodkins of jewels . . .

"She told me the two girls at her feet were her daughters, though she appeared too young to be their mother. Her fair maids were ranged below the sofa to the number of twenty, and put me in mind of the pictures of the ancient nymphs. I did not think all nature could have furnished such a scene of beauty. She made them a sign to play and dance. Four of them immediately began to play some soft airs on instruments between a lute and a guitar, which they accompanied with their voices, while the others danced by turns. This dance was very different from what I had seen before. Nothing could be more artful. The tunes so soft! the motions so languishing! accompanied by pauses and dying eyes! When the dance was over, four fair slaves came into the room with silver censers in their hands, and perfumed the air with amber, aloë's wood, and other scents. After this they served me coffee upon their knees in the finest japan china, with *soucoupe* of silver, gilt. The lovely Fatima entertained me all this while in the most polite, agreeable manner, calling me often *Guzél sultanum*, or the beautiful sultana, and desiring my friendship with the best grace in the world, lamenting that she could not entertain me in my own language.

"When I took my leave, two maids brought in a fine silver basket of embroidered handkerchiefs; she begged I would wear the richest for her sake, and gave the others to my woman and interpreter. I retired through the same ceremonies as before, and could not help thinking I had been some time in Mahomet's paradise, so much was I charmed with what I had seen. I know not how the relation of it appears to you; I wish it may give you a part of my pleasure, for I would have my dear sister share in all the diversions of

"Yours," &c.

The writer of such letters as these might well say to her sister, with reference to those of Madame de Sévigné, "Very pretty they are, but I assert, without the least vanity, that mine will be full as entertaining forty years hence."

But her residence in the East formed but a small portion of her life. In 1717 Mr. Wortley was recalled from Constantinople; and Mr. Addison, the *Spectator*, who was at that time Secretary of State, wrote him a letter on the occasion, in which he endeavoured to make out that he was in high favour at home—not, however, very successfully.

On arriving in England with her husband, in 1718,

Lady Mary was persuaded by Pope to take a house at Twickenham ; and for a while their intercourse was characterised by great warmth ; but it had no right basis, and the fire, which burned fiercely, soon burned itself out.

Their quarrel is a matter of history. And even, according to Lady Mary's account, although Pope's conduct was unworthy, hers was unfeeling. He had accustomed himself to write to her in an extravagantly complimentary style, not unusual then, and she had not taken his letters seriously. She had received the vain little poet's expressions of admiration as so much adroit and fashionably gallant flattery, and nothing more. But one day he made a verbal declaration of attachment, which she was compelled either to resent or to ridicule. If she had possessed a real womanly character her course would have been simple enough. Amiability and modesty would not have been incompatible with the expression of such indignation as would have awed the offender, and impressed him with the majesty of high-souled purity. But she was heartless and cruel. She saw that resentment might cause scandal and inconvenience ; whereas ridicule would leave the triumph on the laughter's side. So she burst into a fit of laughter, and made an enemy for life of one who never forgave, and whose malice knew no scruples when he was provoked. Of the manner in which both parties pursued their quarrel, we say no more than that it was at once disreputable and contemptible.

For some years she continued to reside in this country. Her birth placed her in the highest circles of society ; her beauty and wit made her one of the most observed of all observers there. And she continued to be a copious letter-writer. Her letters from Twickenham teem with scandal, and jests, and the tittle-tattle of that corrupt time, which has been so often, and so falsely, called the Augustan age of England.

But she does not appear to have been happy. Apart from the past of her career, we do not think that her disposition was one for happiness. When her father died, which he did somewhat suddenly, in 1726, her chief sorrow is about—his will. She and her step-mother were quarrelling when the Duke expired.

The son, whom she had inoculated at Belgrade, was a torment to her and everybody as a boy, and a disgrace as a man. And the husband, for whom she had deceived her father, was never a help-meet for her, their characters and dispositions being quite opposite.

The latter fact is the only one which can be offered in solution of the strange problem presented by the last years of her history. In 1739 she left England, after some months' preparation, and she remained abroad until her husband died in 1761. She wrote sometimes to him; she even seems to have pressed him to join her. But he never did. After his death she was persuaded by her daughter to revisit England. She arrived in October 1761; but her journey aggravated a complaint under which she had long laboured, and she died ten months afterwards, namely, on August 1762, in the seventy-third year of her age.

We had marked for quotation some specimens of her wit and powers as a delineator of English and European life, but we find we must conclude. And yet we pass away from the picture of so much beauty and so much coldness with reluctance. We would fain see some gleam of kindness, some smile of sympathy and affection light up those exquisite and cynical features—we know that we shall look in vain. And so we move onward: and now a sort of reverent awe comes over us as we see in such close juxtaposition the name of one of England's noblest daughters, and a simple letter-writer,—LADY RACHEL RUSSELL.

C. M. C.

LIFE, IN ITS INTERMEDIATE FORMS.

No. II. (*continued*).

INSECTA.

WHEN these pages come under the eyes of our readers, the Butterflies will be beginning to spangle the fields and woodlands. Welcome visitants they always are, in their airy grace and beauty; not less welcome than the flowers on which they alight, and whose brilliant hues and delicate petals are rivalled by their painted and filmy wings.

"The Butterflies are come!" Yes, it sends a thrill of pleasure through the heart, after the long dreary winter, to see the first Butterfly of the season sailing on its broad sylphic pinions in the warm beams of a calm April morning. Perhaps it is the pretty little Orange-tip (*Mancipium cardamines*), that attendant on early spring, coursing along some rural lane; or the Brimstone (*Gonepteryx rhamni*), hovering over a perfumed cluster of primroses, itself scarcely to be distinguished from one of them. Perhaps it is the Admiral (*Vanessa Atalanta*), whose fine scarlet bands afford so rich a contrast to its black velvet wings; or the Peacock (*V. Io*), with its gorgeous violet eyes; or the Tortoise-shell (*V. urticae*), clouded with yellow and orange and black,—busy among the lowly nettles, attentive to the grand occupation that forms "The Whole Duty of" Butterflies,—the providing for the continuance of the race, by depositing here an egg and there an egg, on the stems or beneath the leaves of those grim and formidable weeds. But even if it is one of much humbler pretensions, the White (*Pontia brassicae*) of our kitchen-garden, still it is a

Butterfly, and we look upon it with a hearty welcome, forgiving, and for the moment forgetting, all the robbery it committed upon our cabbage *before it was born*.

And these frail creatures are worthy of our kindly regard, not only for their association (true children of the sun, as they are) with all that is most lovely in scenery, and most delightful in season, but because of their own personal claims to our admiration. If we capture that Red Admiral or Peacock that is so intent upon the nettles, what a glorious creature should we think we had obtained if we had never seen anything like it before! How light and papery, yet how strong and effective, are these broad wings! with what an elegant pencil has this pattern of beautiful colours been traced! But stay! let us look closer at this painting, aiding our sight with a pocket-lens. It is a most exquisite mosaic, fashioned out of innumerable coloured pieces, of regular shape and arrangement.

If we look at our fingers' ends with which we have touched, though ever so lightly, these pencilled surfaces, we see that some of the colouring is transferred to them; and if we have pressed the wing, as in seizing it for the purpose of capture, we find that the finger presents the pattern of the touched part in all its beauty. Now by touching with the charged finger-end a strip of glass, and placing this latter beneath a microscope, we discover an extraordinary specimen of the Divine handiwork. Hundreds of objects are left adhering to the glass plate, which we know not whether to call scales or feathers. They display considerable variety of form, but the most common is oval, or semi-oval, with a little projecting stem or quill at one end. They are thin and flat, transparent and membranous in texture, with several ribs running lengthwise, the points of which project beyond the end of the scale.

These scales, then, produce the beautiful parti-coloured

patterns of a Butterfly's wing ; but of positive colour they possess individually no trace under the microscope, save a dull smoky appearance. It is by the separation and reflection of the prismatic hues that they appear beautiful, but by what law some reflect none but red, some none but yellow, some none but blue rays, we know not.

On examining the wing that has been denuded of its coloured scales, we see a transparent, dry, brittle membrane, pitted with innumerable punctures arranged in lines ; these are the depressions in which the stems of the scales were originally planted. They were so ordered that the extremity of one scale reposed on the base of its successor, overlapping and concealing its stem, so that the arrangement resembled that of tiles or slates on a roof. We have said they are innumerable ; the expression is not literally exact, but you will think it excusable when you hear that Leeuwenhoek computed the number of scales on a Silkworm Moth (*Bombyx mori*) to exceed 400,000 ; and those which bespangle the wings of the great tropical Moths and Butterflies, some of which expand eight or nine inches, must be vastly more numerous, since the size of the scales does not at all depend on the dimensions of the wing.

The whole Class of Insects is subject to metamorphosis ; that is, the same individual animal in the course of its progress from infancy to adult age assumes an appearance and form, with organs both external and internal, different at different stages of its life. In none of the Orders are these transformations more remarkable than in that which we are now considering, the elegant Order *Lepidoptera*, the Butterflies and Moths.

The parent Butterfly, seeking on restless wing for the plant which shall form a suitable food for her unborn young, at length lays on its leaf an egg, cementing the tiny atom to its surface by a natural glue, which immediately hardens. In

a few weeks a minute Caterpillar breaks from the prison, and frequently commences existence by devouring with its powerful jaws the horny egg-shell which it has just vacated. But vegetable matter is its proper diet, and, by the providence of its mother, it finds its habitation cast on a plant which is suitable for its nourishment; it is like an ox placed in the midst of an unbounded pasture.

The little worm feeds, and feeds, and feeds, with wonderful voracity: it does nothing else in short, and consequently grows with rapidity. It soon finds its skin too strait for it, for this can stretch only to a certain extent, and has no power of actual growth as ours has, and the horny parts, as the head and feet, cannot even expand, being quite rigid. What must be done? It splits its skin and throws it off; a new one, soft and expansile, having been prepared beneath it. This presently hardens, and when by the rapid growth of the Caterpillar this is stretched to its utmost capacity, it also is split and cast off; and a similar process is repeated four or five times in succession.

By this time the insect has attained its full size; it has not yet, indeed, finished life, but it will need to eat no more; all its nourishment is taken in the Caterpillar state, which it now prepares to quit for that of the Chrysalis. No one would have recognised the worm-like Caterpillar as the offspring of the aerial Butterfly; perhaps, one might say, without a figure, "He is so changed that his own mother would not have known him," but the character in which the masquerader next appears is as little like either. Look at the stiff Chrysalis, all points and angles, immoveable except for a slight wriggle in his armour, tied up to the stalk of a plant, like a knave to a whipping-post, and say what he is like! Certes, you will not guess (supposing you are not of the illuminati) either Caterpillar or Butterfly.

The process of transformation is well worthy of being

witnessed, and we will describe it as we once had the pleasure of observing it, in the case of one of those beautiful large species known as Swallow-tails. It was an American Butterfly, but so very closely allied to our fine native species the *Papilio Machaon*, and the very scarce *P. Podalirius*, that should you ever be so fortunate as to witness the transformations of either of these magnificent insects, you will see that the one process is the exact counterpart of the other.

When the Caterpillar has attained its full size it crawls to the under part of a branch, and spins a little knob of silk, of which it takes hold with its hindmost false-legs: it then spins a girdle, composed of many contiguous threads of silk, fastened at each end; making a bow large enough to admit the body, and intended to support the Chrysalis; when finished, the Caterpillar puts it over its head. It continues in this state about two days and a half, during which time it has gradually lost its power of holding on by the feet, and rests with its whole weight upon the knob and cincture of silk. It now casts off its Caterpillar skin, and enters the Chrysalis state. By good fortune we were happy enough to see this change take place in one of our captives. The Caterpillar appearing very uneasy and restless, we watched it at intervals for about half-an-hour; when, by strong and apparently painful inflations, a slit was made in the back of the third ring or segment, and the Chrysalis forced itself through; gradually extending the slit *upwards*, till the head was split and separated, and *downwards* for several rings. The skin was then gradually pushed down: we had wondered how it would get through this part of the business, for the weight of the Caterpillar pressed the silken girth very tightly round the body; but there seemed no real difficulty; the loose skin being worked backwards by the motion of the segments. When it was pushed down to the extremity, the tail of the Chrysalis was thrust out under-

neath, and pressed upwards to take hold of the little knob of silk ; this being done, the old skin was jerked off by the writhing of the body. The silken cord was now round the body, between the sixth and seventh rings, and the Chrysalis twisted and turned, till it got the girth three rings nearer the head, about the middle of the wing-cases ; the skin was so soft and the silk so slender, that it cut into the wing-cases, so far as to be invisible, but no ill resulted from this circumstance to the perfect Butterfly.

The newly transformed Chrysalis is soft, with the skin resembling in consistence wetted parchment ; its shape is not very remote from that of the Caterpillar ; in the course of an hour or two, however, it materially alters its form. Some of its segments contract and condense, prominent angles appear, the skin roughens and becomes very rigid, and the creature has assumed the condition in which it will pass a sort of torpid vegetative existence, through some nine or ten months in the year, or even more.

In the case of which we are speaking, the transition to the Chrysalis state occurred near the end of August, and it was not until the middle of July of the following year that the Butterfly was matured.

When this period of second birth approaches,—so apt an emblem of the resurrection, that the ancient Greeks, who used the same term (*Ψυχή*, *psyche*) to signify a butterfly and a soul, called the resurrection “the hope of worms,”—it is manifested by a change in the appearance of the Chrysalis. The skin becomes very thin and fragile, and, for some days before the exclusion, the colours, spots, and marks of the perfect Butterfly, are distinctly perceptible, through the transparent integument, but all in miniature.

At length the hour arrives ; the Chrysalis, which for some hours has appeared uneasy, wriggling, and apparently inflating its body, succeeds in splitting the thin and brittle

skin of the back. The imprisoned Butterfly pushes out ; the head with its palpi and antennæ, and its spiral tongue, and the legs, are all drawn out of their several sheaths, the latter limbs are thrown forward, and the insect stands on them, weak and staggering. It rests a moment or two, then proceeds ; the painted wings now appear, minute and hanging against the sides like wet paper, but perfect in their colours and markings. The Butterfly is free !

It essays to lift its wings, but these organs, all soft and flabby as they are, are utterly unfit for flight. But see, a change is coming over them ! They are swelling irregularly, crumpling up, puckering into folds here and there, as their vessels are distending with fluids from the body. They look hopelessly spoiled. Though small at first they were at least symmetrical ; but now they look like pieces of wet paper crushed up in the hand and partially opened, and the farther the work proceeds the worse it appears to grow. But by and by, they begin to become smooth and even again ; the distention and expansion have reached to every part in an uniform ratio, and wings of full size and perfect form are developed, still, however, soft, flaccid, and pendent. A quarter of an hour more removes this defect ; the elegant organs momentarily acquire rigidity ; at length the insect can raise them to an erect position. As soon as this is attained, the beautiful creature marches to and fro, as if rejoicing in its new powers, and proud to display them ; but in reality testing the capabilities of its organs, and perhaps accustoming itself, by repeatedly opening and shutting its wings, to the practice of those muscular movements on the force and precision of which its flight will depend.

At length it launches into the air, and sails away to the inviting flowers, a happy denizen of a new element.

P. H. G.

A WEEK IN WURTEMBERG.

AMONGST the earliest and best of the friendships we formed in Stuttgart was that of the City-Vicar, C. G., who gave us from the first a true Suabian greeting, and covenanted with us, that every afternoon of our stay an hour or two should be spent together in the Royal Park or on the hills that rise on each side from the city. To conversations thus enjoyed we owe much, as our very intelligent friend was well able to instruct us on all those questions connected with church, school, and people, on which we were anxious to inform ourselves, and from travel abroad, especially in America, was in a position to exercise a more unbiassed judgment than is possible with those that have not passed the borders of their native land. This is needed; for to nothing but a large degree of self-complacency, inherent in the natives of this little kingdom and the citizens of its small metropolis, can be ascribed the expressions not unfrequently heard, "There is but *one* Württemberg," "There is but *one* Stuttgart." It was in one of these evening walks with our dear friend, the Stadt-Vicar, that we met in the park the royal family, in the countenance of one member of which we thought we discerned the marks of anxiety and grief. It was Olga, the Crown princess, and daughter of the Russian Czar. A few hours before Stuttgart had received the news of the battle of the Alma, and Russia's first defeat had been magnified in the public papers into the taking of Sebastopol, with the capture of 22,000 prisoners, and the loss, in killed and wounded, of 18,000 of the Imperial troops! The end of our walk on this occasion was Cannstadt, famous for its baths, and a

very favourite resort of the inhabitants of Stuttgart. To the English reader Cannstadt has acquired a melancholy interest from its having been the death-place of our lamented countryman Dr. Kitto; and to many it will call up the name of the gifted and genial student John Mackintosh, who in like manner there ended his promising career.

Tuesday morning was devoted to the Mission Conference,—a meeting which lasted five hours. The Basle Society, though having its centre in Switzerland, and drawing much of its resources from that country, is nevertheless bound by so close an affinity to Würtemberg, that a Conference in Stuttgart is reasonably deemed most desirable. From Würtemberg it receives, at least, 68,000 francs per annum, which, from a kingdom of less than two millions of inhabitants, the majority of whom have often to suffer from absolute want, is a contribution sufficiently demonstrative of their ardent zeal in the cause of Christ. Still more, to Würtemberg does the Basle Society look for its supply of *men*; and in the devoted missionaries who come forth from its obscure villages to fill the ranks of the Basle and other Missionary Societies, Würtemberg confers a boon of far richer price and higher value than any that can be bought with gold. Of the missionaries in the service of our own "Church Missionary Society" in England, fifty-three have received their training in the Basle Institution; and out of this number not less than twenty-nine are from the little kingdom of Würtemberg. The Basle Institution has sent thirty-nine ministers into the United States, twenty-four of whom are Würtembergers. In Russia, sixteen clergymen have been sent out from the same establishment, to take the spiritual oversight of the German communities. Jerusalem has its present bishop, and many other places in all parts of the world have ministers, missionaries, professors, superin-

tendents, or schoolmasters, for whom they are indebted to the Basle Institute, and of whom the majority are from the same small kingdom. Of the 264 men who have received their training in the Basle Missionary Seminary, the little kingdom, whose population is far below that of our own city London, has contributed the greater part,—more therefore than Switzerland, Baden, Bavaria, Prussia, Saxony, and every other country added together. With circumstances like these, a Conference such as that we witnessed in Stuttgart, whereby the brethren at Basle had an opportunity of personal intercourse with their devoted friends in Würtemberg, although none such had previously taken place, seemed most appropriate; and for the future we may anticipate that the Christian people in Würtemberg will feel themselves still more closely bound to their brethren in Switzerland, and ready still more largely to contribute to the furtherance of their missions.

Amongst other pleasing matters of remark at this Missionary Conference, we will notice one which struck us somewhat forcibly. Of the whole number present, which might be from two to three hundred, at least two-thirds belonged to the agricultural class,—being men who had in many instances come five, ten, or twenty miles, headed most usually by the clergyman of the village, in order to attend this meeting. These peasants are by their deep poverty sometimes almost without the ordinary means of subsistence; yet it is amongst them that the Mission finds its warmest supporters; and it is in their ardent piety and zealous devotion to the cause, that we discern the true secret of its strength.

We have already said that Würtemberg has attained no mean eminence in the world of letters. Its University at Tübingen, seventeen miles from Stuttgart, has sent forth, since its foundation in 1477, a succession of men who have

distinguished themselves in science, literature, and philosophy. At the end of the fifteenth century, it enjoyed the presence of the greatest German scholar of the age, the learned Reuchlin. At a siege of Stuttgart, the commander's orders were to spare the house of Reuchlin and the treasures of his library; and his ashes now lie in the same city, where he died in 1522. The Reformer, Melancthon, gave to the same university the earlier of those Greek prelections which brought him the admiration of all the men of learning of his day. Much, in like manner, of its after fame does it owe to Camerarius, who, together with the illustrious men we have already mentioned, may be called the fathers of learning in Germany. With such an ancestry, Tübingen has never lost its name as a school, especially for the classic studies and the higher philosophy. It has both a Protestant and Catholic faculty, with about fifty professors or teachers, and, although frequented almost exclusively by natives of Würtemberg, numbers ordinarily from 800 to 900 students. About one-third of these are students of medicine and law, but of the remainder the greater portion are entered as students of theology, and a large number are at all times maintained on a government foundation, the enjoyment of which is obtained solely through merit. The best scholars are selected from the gymnasia, or classical schools, with which Würtemberg is well supplied, and where the lectures to the more advanced classes are delivered in Latin: these are placed in what is termed the "Lower Cloister," where they pass through four years of the most thorough training. A second examination follows, from which the thirty most distinguished alumni are promoted to the foundation in the university, where they enter upon another four years' profound study of the highest departments of philosophy, classical learning, and theology. After this they are admissible to the church, and are commonly advanced from time to time to higher stations

or better cures. Those who have had the advantage of the exhibition, are subject to an "advancement examination" until the age of sixty. As the foundation receives thirty fresh scholars every year, the number supported by the government in the theological curriculum is ordinarily 120, besides the large number maintained from the same source in the lower seminaries.

One prominent characteristic, not only of the Tübingen scholars, but also of the national mind, is a love for speculative philosophy. Slow in thought and ungainly in manner, as the Suabian proverbially is, he nevertheless far outstrips his brother Germans in intellectual power and dialectic subtlety. In Schelling and Hegel, Tübingen has sent forth two who in this age have ventured farthest into the depths of metaphysical research, and headed respectively two schools of philosophy, which for a time divided Germany; whilst in Paulus, Strauss, and Baur, it can also claim for itself the unenviable notoriety of producing the leaders of the three chief divisions of whatever is evil in modern German theology. Baur was the master of Strauss, and received his scepticism from his pupil. He still lives, and, although at a very advanced age, retains his position in the university, whilst in the neighbouring class-rooms a contrary theology is taught by men like Beck, Landerer, Palmer, and, until very recently, by the learned and truly estimable Schmid. This system of supplying the bane and the antidote in daily potions, to exercise a mutually corrective influence, is confessedly singular, and is one of the great evils of a state-organisation, which allows no removal on the ground of unsound teaching from chair or pulpit. But if "the Tübingen School" is synonymous with the most insidious forms of modern scepticism, it is also clear that a system of antagonism, such as we have described, will permit no intellectual sluggards, compels independent inquiry, and

cannot co-exist with any belief on mere authority, or hearsay, or blind custom. Tübingen has sent forth a double host,—the one of men powerful for error, the other of champions fitted by the severest discipline for the defence of truth. We are glad to know that the latter is a large and an increasing army. None are so equipped as they for the controversy with that error, in the midst of which they have fought their way to the religious conviction they possess. We remember the remark of a German professor of our acquaintance, "It is a law for devils and ghosts, that they shall go out again by the same road by which they slipped in." And in strict accordance with this law, the schools of scepticism find already the severest antagonists in the hard thinkers that are bred in their own midst, and will most probably be compelled to retire before the very intellectual power through the instrumentality of which they were first evoked. We make no quarrel, therefore, with the scholars of Tübingen for prosecuting their philosophical researches, and cultivating their intellectual powers with such intensity; but we await with hope the introduction of a purer Christian philosophy, which shall be summoned to the service of the truth, and shall contribute the more conspicuously to exhibit the perfect impregnability of Christian faith.

There are few of our recollections of Stuttgart more agreeable than that of our intercourse with the poet Knapp. Born at Tübingen, near the end of the last century, this simple-minded man has spent youth and age in converse with Nature in some of her most lovely aspects, and in yet more hallowed intercourse with Nature's God. His four years at the university were years, he says, of peril; nevertheless, he was preserved. Conz, the poet and professor, encouraged his poetical talents; Hofacker, the great preacher, led him to a more intimate knowledge of the gospel. And ever since that time, poetry and piety, blended in a happy

harmony, have found in Albert Knapp a true and devoted representative, who has held forth from year to year the torch of truth, and in its service presented Germany with the sweetest of its devotional lyrics. His stay at Kirchheim is evidently a period of his life to which his mind often reverts. There, amidst the most exquisite scenery, he was wont to spend happy hours with the excellent Duchess Henrietta, the mother of the queen, and on mountain-top or shaded glen, in view of the grandeur and loveliness of creation, to pour out many of those sweet communings of his soul which are most treasured by the lovers of sacred verse.

We would fain describe—but it is altogether beyond our power—the kind of intercourse we enjoyed with this venerable and interesting man. His *personnel* is the reverse of whatever a stranger is likely to preconceive. We were forewarned on this head; and yet were not prepared for the large frame and unwieldy bulk that advanced towards us as the sacred lyrist of Germany. There is genius in that soul, we know, but it never fires the eye: a choice spirit dwells within, but it spreads no beauty over the countenance: love verily boils over and flows through a hundred channels from that heart, but it needs the interpretation of charity to read a smile in those mounting cheeks. Nevertheless, those cheeks wear a smile at every moment, we acknowledge it; and though the voice is husky and interrupted with asthmatic breathings, the words which flow from that mouth are full of softest cadence, and the thoughts they embody glow with true poetic warmth. Knapp invited us to be often with him, called us his son, invented for us a poetical name, and admitted us to all the intimacy of a genuine Suabian friendship. We first saw him in his own home, cared for and affectionately tended by his daughter. Next we met him by his own appointment at a fixed spot in a certain street, and spent a while in listening as we moved along,

now walking, now pausing for breath, to his discourses on German poetry, on Lessing and his followers, and the un-Christian spirit of much that is most admired in the imaginative poetry of his country. A third time, he would show us one of his favourite spots, and with gradual step we ascended together a height near Stuttgart, whence, as the sun was drawing towards the horizon—for the poet knew to choose the hour when nature would be at her loveliest, we enjoyed a view of hill and vale, town and village, garden and vineyard, field and forest, which was truly fitted to harmonise with a poet's soul. As we entered a lane which led to the ascent, a little girl sprang forward from a garden to put into the poet's hand a garland she had wreathed; at another turn, a boy advanced with his bow and respectful greeting, knowing that he too would receive his few *kreutzers*, and with that a blessing from the dear old pastor. There were several such,—the children, doubtless, of his parishioners,—who know his affectionate ways, and like to feel his hand upon their head, whilst he stops to ask them some kindly question, or say some appropriate word. Nothing can exceed the cheerfulness of our poet friend. He seems ever the same, filled with every good disposition, and always seeking to amuse whilst he instructs. He has a peculiar fondness for strange plays upon words, arch and humorous remarks, enigmatical allusions, and what are termed “Sua-bian rubs,” all profoundly difficult to one who hears through the medium of a foreign language, and is a stranger likewise to the national habits, the proverbs of the people, and their mythic lore. He was always ready to assist, however, and, constituting himself our professor, set us right, if ever our weak German betrayed us into a grammatical error or uncouthness of expression. One last characteristic we hope will not be misinterpreted to the poet's prejudice:—he is fond of his own verse, and glad to find its merit appreciated.

We cannot blame him, however. In the midst of all, there is a beautiful humility and simple child-like spirit, which admires, not because it is his own, but because it is truly admirable. His muse, too, is not yet silent; but, as age ripens, his lyre is attuned to yet holier and sweeter strains. Through the eighteen years he has lived at Stuttgart he has sought, he says, to dedicate every power and all his time to the service of his Saviour, and allowed poetry only to lie as a bouquet upon the laden desk. In our last walk together he told us much of his feeling on this subject. He felt that every garland he might yet wreath must be laid upon the altar of the sanctuary, and every tone of his harp give back the praise of Him that inspires it.

Our episode on Knapp leaves us no room to speak of the other poets, living or dead, of Würtemberg. Besides Schiller, we have Hauff, Herwegh, and Schwab, Kerner and Mörike; the two latter remarkably characterised by that pure *naïveté* and originality of thought, of which the German poets furnish such fine examples; and Hölderlin, the school-fellow and companion of Schelling, himself a great philosopher and noble poet, who wrote under impulses of a kind of frenzy, and whom Schiller used to call his "*liebster Schwabe*." Let us only mention one more, still living, whose name is amongst the best known by our own countrymen,—we mean Uhland, the fellow-townsmen and friend of Knapp,—whose exquisite poems must ever be cherished amongst the choicest gems of German literature.

T. H. G.

TIMES OF REFRESHING.

CHAP. III.

TOWARDS the end of the fourth century there came up a voice from the Eastern side of the Cottian Alps, that indicated a fresh upspringing of life and truth. God had prepared His instrument, and in due time he came forth to do His work. His name was Vigilantius,—a good and noble name, not unsuited to the character of him who bore it. He was a man of excellent mind and character; one who had travelled much, and seen, with his eyes fully open, the condition of the Church, from Western Gaul to Eastern Syria. His soul burned within him at the wickedness and superstitions which everywhere prevailed in that body which still called itself the Church of Christ. He could not be silent at the enormities which overflowed on every side,—enormities which heathenism never surpassed,—enormities practised and patronised by Bishops, and Popes, and Fathers.

This man of God, like Luther in a later age, spoke boldly out, and his words went forth from his native Aquitaine till they reached the farthest East. He attacked clerical celibacy, the adoration of dead saints, the intercessory power of the martyrs, the reverence paid to their bones and dust, the pretended miracles wrought by their relics, which men such as Ambrose were not ashamed to countenance. These, and many other such evils, he boldly denounced, not sparing Jerome, the greatest superstitionist of the age. For this faithful testimony Rome has enrolled him a heretic.

Jerome, in his shameless reply, heaps all manner of abusive epithets upon his opponent, as was his wont in

every controversy. But these are of little moment to us, save as additional evidence of the character of the "saint" who uttered them. That which is of more importance to us is the fact which comes out in the course of his treatise, that the whole diocese in which Vigilantius lived was "polluted" by his doctrine, so that it was vain to attempt the extirpation of the heresy. Through the teaching of this faithful witness a whole province was led into the knowledge of the Gospel of Christ. The word of the Lord grew and multiplied; and in these mountainous regions truth found for itself a home when banished from that which arrogated to itself the name of "the Church of God." In these rocky solitudes the persecuted remnants of the second and third centuries had taken refuge. There they had maintained the life which had elsewhere died out, and the purity which had been elsewhere totally corrupted. And now God sends down His Spirit and raises up a new witness among them. The testimony of that witness is blest, and the work is wondrously revived. The shower falls, and the weary heritage is refreshed. Let the reader not forget that these very Alpine glens were the abodes of the Waldenses in after years; and that it is the country of Vigilantius that is now rising up before Europe, ready to do battle as of old with the Church of Damasus and Jerome.

Just about this time Britain gave birth to one whose name has come down to us linked only with error and schism. Going forth from his native Wales, Pelagius preached everywhere the doctrine which he conceived was needed most by a dead age and a formal Church. We have none of his writings. His opinions are only known to us by the refutations of his adversaries. Did he then really hold what he is said to have done regarding man's native goodness and the non-necessity for the Spirit's work? It is hard to

condemn without hearing ; and there are many things which incline us to think that he has not been quite fairly dealt with. We are not disposed to credit Jerome's word at any time ; but we feel peculiarly disinclined to do so when we read as the climax of that father's arguments, that this heretic could not but be gross and stupid, seeing it was upon Scotch porridge that he was fed.* We have no wish, however, to defend Pelagius throughout, more especially as Augustine, a more trustworthy father than Jerome, has brought like charges against him. Yet we cannot help feeling as if he were the John Wesley of that age,—a man full of zeal, and who, with many errors, still seemed desirous of publishing to dying fellow-men the Gospel of the grace of God.

Shortly after this there comes before us another name, which for ages has been identified with flagrant heresy—Nestorius of Antioch. As in the case of the other “heretics,” so in his, the sentence pronounced against him is one which we have no means of verifying. The error charged upon Him was, that of making “two persons” in Christ, thereby making void His real personality as the Incarnate Word. The accusation was in all likelihood untrue, deduced from some one expression, perhaps by men whom he had offended, and who wished to ruin his character and destroy his influence. The head of his offending was his refusal to call Mary “the mother of God.” He was willing to call her the mother of Him who is God, but ~~Θεοτοκος~~ he refused to call her. For this the Fathers and Councils in those days branded him as a heretic ; and Rome, in subsequent ages, has perpetuated the charge,—nay, has had such strange power over Protestants as to induce them to endorse the charge. There can be no doubt that the crime

* “Stolidissimus et Scotorum pultribus prægravatus.”—Jerome's Works, vol. iv. p. 20. Proem. to his Com. on Jeremiah.

of Nestorius was his refusal to worship Mary, and to give her titles which his soul abhorred as blasphemy.

God seems to have used Nestorius as His instrument for quickening the languid zeal of multitudes in his day. He was a man of fervent spirit and of a large heart. His soul yearned over the multitudes that knew not God ; and through him and his followers, missions were set on foot in different regions of the globe. Through his agents China first heard the Gospel, and thousands were gathered to Christ in that dark land through his instrumentality. While the Church called "catholic" was becoming the Church of Mary, instead of the Church of Christ, and hugging the shadows of worse than pagan superstition then resting over her, Nestorius was sending out the ambassadors of peace to distant lands. It was no common shower of blessing that then came down ; and of the work then done we have the remains to this day in the Nestorian Churches of the East.

The history of the Paulicians is one of no common interest. It extends over centuries, beginning with the seventh, and indicates how graciously God was still giving times of refreshing in the midst of wide-spread apostasy on the part of those who called themselves the Church of Christ. Much of His mighty power did the Holy Spirit put forth in that age, and many wonderful works did He do in behalf of the persecuted remnant who held fast the grace of God. The story is too long to be here recounted. But it is worthy of our search—far more so than much of that on which Church-historians dilate and dwell. Of the tens of thousands that then bore noble witness to Christ, but a few names have been preserved. Not till the day of the Lord shall we learn how glorious was that time of refreshing, which, ere it passed away from the Paulicians, had raised up successors to the Albigensian Churches.

The story of Succat (St. Patrick) and his labourers ought to have been noticed before. In him we find a true apostle, coming forth in the name of the Master, and bearing the tidings of the Master's death and love to a nation of dark barbarians. He is one of the many examples of the wonders which God does by single labourers—individual men, who, without means, and without machinery, and without the help or countenance of others, go forth to work for Him in simple faith. It was a marvellous shower that then came down on Ireland. A nation seemed born in a day.

No less wonderful is the story of Columba and his fellow-apostles, in a succeeding age. The records of their work are scanty; but the fragments handed down to us show "what manner of men" they were, and what manner of work it was that they wrought for Scotland and its isles. The Spirit of God was with these men, and from the bare rock of Iona he sent out a light which radiated into the farthest recesses of British darkness.

Then there rose up Huss in Bohemia and Wicliff in England,—that double star of the fifteenth century. They did not rise alone. They were merely the brightest of a host of stars which then appeared in the dark firmament. Huss left behind him memorials of his faith and zeal which remained uneradicated, till Luther appeared to carry on the work which the Martyr had begun. Of Wicliff, yet more might be told. The work wrought for England in his days was a vast and noble one. We mistake it utterly if we look on it as feeble or partial. It was indeed crushed. But it had spread on every side, till, as has been truly said, every fourth man in the land was a Lollard. We know but little of that age. But it was no stinted measure of refreshment that was then given. It renewed the whole island for a time, and only passed off for a season in order to show itself

more gloriously in the succeeding age of Latimer and Cranmer, and Wishart and Knox.

The Reformation was a glorious day for England. But we are apt to forget that she had glorious days before,—days whose results have not indeed been so abiding and so universal; but yet days which tell of refreshing,—days which intimate how often, even from the first century, God has visited this island,—days in some respects as wondrous and as blessed as those which the last three centuries have witnessed.

There are many, even intelligent Protestants, who in their inquiries into the Christianity of Great Britain, hardly look beyond the Reformation. They seem to think that then true religion began and that the pure gospel then sprang up as a new thing in the land. Or if they go timidly backward a little farther, they speak of Augustine as Britain's missionary, the first enlightener of her darkness! A most pernicious error, which, borrowed from Romish histories, was dropped into the passive ears of youth. Augustine preach the gospel! How could he? He did not know it himself. Augustine bring light to us from Italy! He himself possessed nothing but darkness. He brought us Popery,—that was all he did. He was the Apostle of Rome,—sent to impose its semi-paganism upon a people that spurned it,—sent with Romish fetters to bring the free Church of this island into bondage. We hear sometimes of Britain's debt to Augustine. Britain's debt! She owes him nothing but forgiveness for the wrongs and woes he wrought her. The pure gospel had been in Britain for ages before; and a purer gospel it was than Augustine knew. True, its purity had been dimmed,—the life of godliness was not what it once had been; but still the British Church to which Augustine came, had preserved more of the life and the truth of primitive ages than he

possessed. It is time that we should dislodge from our memories the Popish fables concerning Augustine's mission, which have done such grievous injustice to the name and character of our early fathers.

Once and again did God visit these lands with "times of refreshing." Shower after shower descended. Many a mighty harvest has been reaped from these fields of ours during these eighteen hundred years. Their records have perished, so that it is but little that we can write of these days. But there are many fragments of British Church-history remaining which show that God has never wholly left our shores. He left Palestine when He had gathered in His harvest there, and did not return. He left Asia when He had done His work there, nor has He returned. He left Greece, He left Africa, after a few ages of blessing. But He has not done so with us; and eighteen centuries of blessing declare the wondrous love with which God has loved us. And out of what land have such multitudes of souls been drawn to Christ as out of this far-off rock of the ocean? Our testimony for Christ dates from the first century. Our protest against Popery dates from that hour when Augustine set foot upon our shores. It has not been the protest of three centuries; but the protest of twelve hundred years.

H. B.

MY BROTHER'S KEEPER.

CHAPTER XIV.

So th' one for wrong, the other strives for right.—*Fairy Queen.*

'WELL what sort of a time did you have among the quakers yesterday?' said Thornton when he saw Hulda at breakfast next morning.

'O it was splendid!' said Hulda with a pause of delight in the midst of buttering her roll.

'What was splendid?'

'O everything! And they were so kind to me—and I like Mr. Raynor *so* much! And the flowers—O Thornton, did you see mine that I brought home? and the camellia? That is Rosalie's; and it was the very prettiest one they had; and I told Mr. Raynor so, and yet he would cut it.'

'Perhaps he did not agree with you.'

'O yes he did. I thought he was going to cut a white one at first, and then he chose this.'

'Then he did not choose the prettiest, to my fancy,' said Thornton.

'Why you don't know anything about it!' cried Hulda. 'I never saw such a beauty, and I don't believe you ever did.' And away she ran to bring ocular proof of the camellia's perfectness. No further argument was necessary; for admirable kind and culture had produced one of those exquisite results that the eye is never satisfied with seeing. Thornton silently took it in his hand to examine.

The flower was hardly at its full opening, two or three of the inner petals being yet inclined towards each other

with a budlike effect; but the rest lay folded back in clear glossy beauty, leaf beyond leaf—each one as spotless and perfect as the last. They were of a delicious rose-colour—not very deep, but pure, perfect, as a tint could be; and the stem, which had been cut some inches below the flower, spread out for it an admirable foil in two or three deep green leaves.

‘Is n’t that beautiful?’ said Hulda, who stood at her brother’s side with her little hands folded and her little face in a rival glow.

‘Exquisite!—I never saw such a one! Alie, I must get you a plant. I wonder what is its name, if it has one.’

‘There was a little stick stuck in the flower-pot,’ said Hulda, ‘but I don’t know what was on it.’

‘Do you know?’ said Thornton looking towards his sister.

‘I think, I believe it is called Lady Hume’s blush.’

Thornton laughed.

‘This is probably a variety called Miss Clyde’s blush. It might be, at all events. Methinks the quakers performed some conjuration over you, Hulda,—it seems that you have suddenly become a little conductor—a sort of electric machine, charged by one party with a shock for another.’

‘Shock!’ said Hulda. ‘But I don’t think I have shocked anybody.’

‘That is the very thing.’

‘But what do you mean by Miss Clyde’s blush?’ said Hulda, who was getting excessively mystified.

‘Ask her what she means by it,’ said Thornton. ‘Alie just ring your bell, will you? Tom—did you get my sword-belt?’

‘No sir—Jansen said he thought all the Captains was a conspirating agen him; and if they were Generals instead he couldn’t do no more than he could,’ he said.

‘And what did you say to that?’

‘I told him he was a considerable piece off from doing more than he could, yet, and I guessed he better send the belt home to-night and no more about it.’

‘I guess so too, or there will be more. I shall dine out of town to-day, Rosalie, so you need not wait for me.’

‘You will come home to tea?’ she said as she rose and followed him out of the room.

Her look half inclined him to come to dinner as well, but he only laughed and said,

‘You had better not ask me, because if I come I may bring you your hands full.’

‘Bring anything in the world that will make home pleasant to you,’ she said.

‘O it’s pleasant enough now — and you are charming; but ‘variety’s the spice of life,’ you know Alie.’

‘A most unhappy quotation in this case,’ she said with a slight smile. ‘That life must miserably dwindle and deteriorate which is fed upon spice alone. Suppose you try brown bread for one night?’

‘You shall try red pepper for one night, to pay you for that,’ said Thornton. ‘Why shouldn’t you and I be like two birds of Paradise,—sitting up in a tree and eating pimento berries?’

‘What a naturalist you would make!’ said his sister smiling. ‘You would condemn the birds of Paradise to as unwholesome diet as you give yourself.’

‘Unwholesome according to you.’—

He stood by her, he hardly knew why; but perhaps half in curiosity to see what she would say; for the changing light on her face told of varied thoughts and feelings. But when she spoke her voice trembled a little.

‘“The kingdom of heaven is as a man travelling into a

far country, who called his own servants, and delivered unto them his goods. And unto one he gave five talents, to another two, and to another one; to every man according to his several ability; and straightway took his journey.

“After a long time the Lord of those servants cometh and reckoneth with them. And so he that had received five talents, came and brought other five talents, saying, Lord, thou deliveredst to me five talents: behold, I have gained besides them five talents more. His Lord said unto him, Well done, good and faithful servant; thou hast been faithful over a few things, I will make thee ruler over many things: enter thou into the joy of thy Lord.”

‘Thornton—shall we live that life together?—the life of heirs of heaven?’

‘I wish you would let go of my hand,’ said her brother, with a motion as if he would shake it off. ‘What upon earth is there in that immense quotation to call forth such a sorrowful face?’

‘Because,’ said his sister with a gush of tears, as she took away the offending hand; ‘because “*there was one servant who went and digged in the earth, and hid his lord’s money*”—and to him it was said, “*Depart.*”’

The tears were quickly wiped away, and again she looked up at him.

‘Do you think it is very kind to take the edge off my day’s pleasure by such a prelude?’ said he.

‘Yes—very kind—to say what should do it.’

‘By what rule of sisterly affection?’

‘The rule in my own heart,’ she said with a sigh. ‘What is a day’s pleasure that my love should balance it against eternal life? There is time now to obey—an inch of time,—and then “the angel shall lift up his hand to heaven, and swear by Him that liveth for ever and ever, that there shall be time no longer!”’

'And how do *you* know that I need time for anything of the sort?' said Thornton, when his silence had taken to itself displeasure. 'What right have you to suppose, that because "after the most straitest sect of our religion I do not live a Pharisee," I am therefore excluded from all its benefits? You see I can quote Scripture too.'

She did not raise her eyes, though the sudden flush on her brow told that his words had struck deep. And it passed away, and she said—betaking herself to Bible words as if she would not trust her own,

'"I speak as unto wise men—judge ye what I say."—"*Every man that hath this hope in him, purifieth himself even as He is pure.*"'

And Thornton turned, and left her.

How he despised himself for what he had said! for the implication his words had carried! And against her—upon whose sincerity he would have staked his life.

Christian, in the Slough of Despond, struggled to get out, but always on the side next the wicket gate; while Pliable, having no desire but to be at ease—even in the City of Destruction—was well pleased to set his face thitherward to be clear of the Slough.

Thornton soon got rid of his discomfort,—only the remembered touch of his sister's hand was harder to shake off than the hand itself. Perhaps on the whole he was not sorry for this. In pursuit of bird's nests he was swinging himself over a precipice, with but one visible stay—and that stay the hand of a frail girl. He knew he had hold of her—or rather that her love and prayers had hold of him; and with little thought of her life of watching and anxiety, he swung himself off and rejoiced in his freedom.

He resolved, as he walked up Broadway, that he would go home to tea that night, but not alone,—anything was better than a tête-à-tête with his sister; and besides, as he

remarked to himself, 'it will never do to let her suppose there are no men in the world but Henry Raynor.'

Rosalie sat alone in her room, half reading, half dreaming in the warm spring air of the afternoon, — now applying herself to her book and now parleying with some old remembrance or association; sometimes raising her eyes to take in most unworldly pleasure from nature's own messengers, and then trying to bring her mind back to more fixedness of thought. But a sunbeam that at length fell on her book wound about her its silken bands of spirit influence; and laying her folded hands in the warm light, Rosalie leaned her head back and let the sunbeam take her whither it would.

It went first athwart the room to little Hulda; who tired with the day's play had curled herself up on the bed in childish attitude and sleep. Her doll lay there too, not far off; and a little silk scarf with which she had been playing was still about her, and answered the purposes of adornment more perfectly than ever. On all the sunbeam laid its light hand tenderly; and then it darted to the table beyond where stood the little sleeper's dish of flowers. The Camellia was there too, and one look Rosalie gave it; and then turning her head towards the window and leaning it back as before, her eye again followed the sunbeam but this time upward,—her face a little graver perhaps—a little more removed from earth's affairs, but no less quiet than it had been before. And proving the truth of George Herbert's words,

" Then by a sunbeam I will climb to thee ;"

it was not long ere her mind had laid fast hold of the promise, 'Unto you that believe, shall the Sun of Righteousness arise, with healing in his beams.'

The ray had done its work and gone; and 'the lesser light' had held forth her sceptre, when Martha Jumps,

whose head and shoulders had been enjoying the afternoon out of an upper window, suddenly rushed into the room.

'Here's a whole army of men coming!'

'Americans, I hope,' said her mistress.

'La sakes, ma'am! to be sure they aint British! and when I said army I only meant the short for multitude. But it's such an unaccountable start for the Capting to come home to tea and bring people with him!'

'He so seldom brings a multitude, Martha, that I wish you would go and tell Tom to make sure that we have bread and cake enough for tea.'

'Let Tom Skiddy alone for that,' said Martha,—'he has a pretty good notion of his own how much bread it takes for one man's supper, and if he hasn't I have; and I'll go tell him as you say; but you see if there aint a multitude. To be sure one hat does look like a dozen—viewed out of a three-story, but I wouldn't wonder a bit if there was five. And Miss Rosalie, you mayn't be conscious that your hair is walking down the back of your neck. There—they're knocking at the door this blessed minute!'

But in spite of this announcement, Rosalie's eyes and mind went out of the window again, so soon as she was alone. For sorrow had put her out of society, and joy had not as yet offered his hand to lead her back; and the gentle spirit which had once amused itself with and among people, now found their gay words but as the music of 'him that singeth songs to a heavy heart.' Her mind found rest and comfort in but one thing; and these visitors—'they knew it not, neither did they regard it.' And she must not only go among them, but must go as a Christian—to take and maintain that stand alone. To do nothing unbecoming her profession,—to be neither ashamed of it nor too forward in making it known,—to be ready always to speak the truth with boldness and yet with judgment.

For a moment it tried her,—for a moment she shrank from the trial; and then throwing off care and weakness upon the strong hand that could provide for both, she got up and lit a candle and began to arrange her hair.

Thornton came upstairs and through the open door so quietly while she was thus employed, that the first notice of his presence was its reflection in the glass before her.

‘Well little Sweetbrier,’ he said, ‘beautifying yourself as usual. Are your pricklers in good order?’

‘As blunt as possible.’

‘Defend me from wounds with a blunt instrument!’ said Thornton.

‘As dull as possible then, if you like that better.’

‘I do not like it at all my dear, only that you never were and never will be dull. There is nothing dull about you,’ said he passing his hand over her hair.

‘Whom have you got down stairs?’

‘Nobody.’

‘Nobody! O I am so glad. Then Martha was mistaken.’

‘Martha is as often mistaken as most people; but when I said nobody, Alie, I did not speak very literally and not at all prospectively. I should have said nobody to signify, at present. A few entities to come and a few nonentities to pave the way. So the rearrangement of your hair will not be thrown away.’

‘O it would not have been thrown away upon you,’ she said. ‘But where did you pick up such a peculiar name for me?’

‘What, Sweetbrier?—out of the abundance and aptitude of my fancy, my dear. I never attempt to argue with you, that I do not scratch my own fingers and find out how particularly sweet you are—and the sweeter the more provoked. So you see—Come!’

ON A GREAT NORTHERN DIVER (THE IMBER),

SHOT IN IRELAND, AND FOUND TO HAVE AN
INDIAN ARROW THROUGH THE NECK.

I STAND in fancy on the plains
Beyond th' Atlantic's farthest flow,
Where stretch the Indian's wild domains
To regions of eternal snow.

There stalks the Moose, there prowls the Bear ;
And now, when winter's reign is o'er,
The birds with clamour fill the air,
And seek their wonted haunts once more.

Now, o'er the desert's vast expanse
The wand'ring savage tracks his game :
His weapons rude,—a bow, a lance,
But matchless in his practised aim.

See how the startled birds arise
From yonder lake ! “ Now, try thy skill : ”
Home to its mark the arrow flies,
And quiv'ring strikes, but fails to kill.

Conscious of pain, and urged by fear,
The Imber's flight has known no check.
Is this a dream ? The bird is here :
And, see ! the arrow in its neck.

A thousand leagues, by sea and land,
The wounded bird the arrow bore,
Then fell beneath the sportsman's hand,
A trophy from a foreign shore.

The Indian arrow — framed of bone,
With copper tipp'd — reveals the place
Where range, upon their deserts lone,
The savage Attabasca race.

Oh, wondrous gift ! to gird the earth,
To follow in its course the sun,
From frozen regions of their birth,
O'er all the fertile earth to run.

Yet Heaven its gifts on *all* bestows,
To meet the evils none can cure :
The power to fly from ill to those —
To others, courage to endure.

Methinks, in this poor bird I find
A type of one transfixed with grief,
Who, leaving former joys behind,
Flies o'er the world to seek relief.

No change of scene the wound can heal,
Though time perchance may ease the smart ;
Yet still condemned through life to feel
The arrow rankling in his heart.

S. C.

SUNSHINE, DAYLIGHT, AND THE ROCK.

SUNSHINE and Daylight had one day a serious difference of opinion about a rocky waste, over which their course led them.

"I am not severe," said Daylight, fixing her clear, generalising grey eyes on the Rock. "If I cannot, like some people, see nothing but what I *wish* to see, no one ever accused me of blackening any one's character. I have known that old rock more years than I care to mention; not a jagged edge, nor a whimsical cranny, but I am intimately acquainted with, and I do not hesitate to say, that a more barren, unmitigated rock I seldom meet with. I do not slander it. I only say, it is nothing more or less than a rock."

Sunshine said nothing, but peeped round the shoulder of her cousin's grey cloak, until the smile of her soft eye met the eye of a little blue violet, which, by dint of hard living, had contrived to obtain a secure footing in a crevice of the old rock; and a flutter of joy passed through the blossoms and leaves of the violet, and communicated itself to a tuft of dry short grass, which had ensconced itself behind. The red and grey cups of some tiny moss and lichens, which had crept into corners here and there, next drank in her kind glances, and fancied themselves wine-cups at a feast. Here and there specks of colour and points of life revealed themselves, and as they looked, expanded.

By this time Sunshine had folded Daylight to sleep on her warm breast. Many weeks had passed when, one quiet afternoon, Daylight again came that way, and glancing critically around, she murmured to Sunshine, "Where is the old grey rock you were so sanguine about?"

Sunshine was silent: her motto being, "Not in word, neither in tongue, but in deed and in truth;" and at length Daylight's quiet eyes awoke to the fact, that the grassy knoll where flowers — tiny rock-plants indeed, but still

flowers—and mosses lay dozing unawakened by her sober tread, was none other than the rock she had known of old. And she said meekly, “Truly, I find that one way to create beauty is to perceive it.”

Then an angel, who was hovering near, on his way back from some message of mercy (for the angels never linger till their messages are given), sang softly, “Love veileth a multitude of sins.” And the old Rock answered in a chorus, through its moss-threads, and lichen-cups, and leaves, and blossoms, “And under the warm veil spring a multitude of flowers.”

E. C.

THE MINSTREL IN THE DARK.

“AH!” said the Bird, imprisoned in a darkened cage, “how unhappy were I in my eternal night but for those melodious tones, that sometimes make their way to me from afar and cheer my gloomy day! I will myself repeat these heavenly notes, like an echo, till I have stamped them upon my soul, and then they will bring comfort to me in my darkness.”

Thus spake the little warbler, and soon had learned the airs that were sung to it with voice and instrument. This done, the curtain was raised; for the darkness had been purposely contrived to assist in its instruction.

Oh, Christian! how often dost thou complain of overshadowing grief and of darkness resting upon thy days! And yet, what cause for complaint, unless, indeed, thou hast failed to learn wisdom from suffering? For human life is but a temporary veiling and obscuring of man’s immortal spirit, that it may be attuned to those happy and heavenly melodies which, when the fleshly curtain falls away, it will for ever sing in light and glory.

From the German of Jean Paul Richter.

OURSELVES.

THE SENSES.

OUR knowledge of external nature is derived through the medium of the Senses. Each sense has an appropriate organ, by which its functions are fulfilled. Each organ consists of two portions: one part has reference to external objects; the other, to our interior nature. As the objects of sense differ in their nature, have different properties, and are governed by distinct laws; so the organs of sense are constructed, not only with reference to the nature and properties of sensible objects, but with deference also to the laws which they respectively obey. Thus, the eye is adapted from the transparency of its cornea to admit the light: its interior structure has strict relation to refraction and the other laws of light. The outer ear is fitted for receiving the impulses of sound; the inner ear to transmit them, in accordance with the capabilities of vibrating substances: and so of the others.

On the other hand, that portion of each organ which has reference to our sensations, consists of a *special modification of the nervous structures*, by which it is adapted for a definite range of impressions, and to which it is limited. Hence, the retina, the expansion of the optic nerve in the globe of the eye, though acutely susceptible of the stimulus of light, has almost no feeling: the two nerves which endow the tongue with taste and feeling, are as distinct in function as they are in their origin: and so of the rest. Beside the duty of receiving impressions, it is also the office of this part of the organ to conditionate them for transmission to the immediate seat of sensation. For the impressions made

by light, sound, hardness, heat, and the other qualities and properties of external objects, are not forwarded in their crude state to the brain; but they are here modified and refined, and so fitted to be sent up to the sensorium. What the change is, by what subtle process it is brought about, and how the modified sensation is transmitted, no research has hitherto discovered. Though the successive links in the chain of occurrences can be distinctly noted, and their order of succession accurately pointed out; yet, whether the message is symbolised, or shaped into cypher, or written in short-hand, or done by telegraphic notices, as if through galvanic wires, and all such ingenious theories, physiology cannot now, and probably never will, be able either to confirm or refute.

The Sense of Touch.—Almost every part of the body is supplied more or less with nerves of sensation, and is, therefore, capable of feeling; but by a special arrangement of the nervous structures the *sense of touch*, the highest form of tactile sensibility, is limited to certain parts, and the feeling of other parts to certain conditions. Hence it is that the heart and lungs, the viscera of the abdomen, and the organs of motion, if in a healthy state, not only exist, but fulfil their functions without our consciousness. They are not intended to be organs of sensation, and their sensibility is really only a collateral effect of their having sensitive nerves. The sense of touch is confined to the skin, and to the cavities and passages lined by it.

The skin consists of two principal parts: the *epidermis*, or *cuticle*, and the *corium*, or true skin. Between these there is a thin layer of agglutinated cells, called the *rete mucosum*, the different tints of which give different shades of colour to the human species.

The *corium*, or true skin, is a firm, dense membrane, which invests the whole person. It is formed of an inter-

texture of tough fibres, among which are interspersed multitudes of minute blood-vessels and nerve-filaments. Its outer surface is studded with small eminences, called *papillæ*, which are best seen, and especially with the aid of a magnifying glass, at the ends of the fingers, where they are large and regularly disposed. It is more than probable that each of these *papillæ* is furnished with a separate filament from the nerves of feeling; and, as the sense of feeling is most acute where they are found in the largest numbers, their aggregate may be considered as forming the *organ of touch*. The surface of the *corium*, thus rendered very sensitive of outward impressions, whether made by the contact of foreign bodies, or variations in temperature, or even by the atmospheric air itself, would be a source of perpetual uneasiness to us, if it were not defended by the *cuticle*, or scarf-skin. This, the outer tegument, having neither nerves or blood-vessels, is wholly insensible. It is strictly moulded on the external surface of the true skin, dips into its numerous foldings, and corresponds with all its elevations and depressions. Its density varies very much, it being greatly thickest on the palms of the hands and the soles of the feet; and thinnest on the lips, the tip of the tongue, and ends of the fingers. This difference of thickness is not incidental, or occasioned by pressure or friction, though by either of these, if long continued, it will become hard and dense; but it is congenital, and is, therefore, to be referred to that providential care which adapts the structure of parts even to their prospective purposes. The simplest impressions made on the organ of touch are caused by the *hardness* or *softness* of various substances. As these produce distinct amounts of impression on different parts of the sensitive surface, we are enabled to ascertain, in some degree, their relative sensibilities; which, however, a simple experiment has enabled physiologists to determine much more accurately,

and to construct a scale showing the differences. If the points of a pair of compasses are armed with suitable pieces of cork, and traced gently on the skin, they will make very different impressions in different places. By a little attention it is not difficult to notice the smallest distance at which, in any particular spot, they seem to be separate: a lesser distance than this gives rise to the feeling of a continuous line; and by then bringing the points still nearer together, the sensation becomes that of a single point. The results obtained in this way vary greatly from each other. Some persons seem to have four or five times as much sensibility as others. A delicate skin and an active mind recognise the smallest distances. The tip of the tongue is more sensitive than any other part of the body; the middle of the back is the dullest; the extremes differ almost sixty-fold. Assuming the average for the tongue as = 1, and arranging the scale of sensibilities inversely as the numbers increase: that for the point of the forefinger is 1·2; for the other fingers, 1·8; at the thumb side of the two first fingers it is 3·3; on the back of the same fingers, 4·4. The red parts of the lips give 3·1; the white parts, 4·6. The other parts of the face are still duller. On the surface of the eyelids it is 7·9; on the cheeks, 9·4 to 9·9. The feeling of the foot is very inferior to that of the hand; but these are much more sensitive than either the fore-arm or leg, and so are the elbow and knee.

This sensibility is capable of being greatly increased by habit and improved by education. The puddy child poking its coral, and almost everything else it can come at, into its mouth, is not only learning its alphabet, and getting the rudiments of natural knowledge at the tip of its tongue and the ends of its fingers, but it is educating them for more accurate apprehensions. By successive lessons the amount of feeling is toned and adjusted to the purposes of life. The ordinary

rate of sensibility thus obtained is, as might naturally be expected, that which best adapts the different surfaces for ordinary use: but the range of increase seems to be almost unlimited. The Bengalee spinning-women are said to be able to distinguish the difference of the threads of the cocoon with a delicacy almost incredible. Persons devoid of hands have educated their feet and toes until they have become as useful as the hands and fingers of others. Even the dull back may be trained to serve the purposes of the deaf and dumb. A near relation of the writer of this paper lost his hearing when he was about four years old. As he retained the power of uttering sounds, and partially of modulating them, he could even in the dark converse tolerably well with those who understood his language; and who, using his back as a tablet, wrote on it with the finger their questions and replies. The alléged power of distinguishing colours must surely be referred either to some variety in the texture of the materials, or to a slight yet appreciable difference of temperature which different colours produce.

The amount of pressure which any body at rest produces on a sensitive surface affords some tolerable information of its *weight*; and the most susceptible parts of the skin detect most readily the smallest differences: hence, if an ivory ball is allowed to run down the cheek towards the lips, it seems to increase considerably in weight. If, however, the balancing power of the muscles is superadded, it increases greatly the value of the test. The unsupported is, at least, twice as accurate as the supported hand.

Our impressions of differences in *temperature* bear, of course, very intimate relation to the heat of our own bodies: and although the skin affords sufficient information for practical purposes, yet it does not determine a real temperature as the thermometer does. For the degree of heat to which the surface has been previously subjected

influences greatly the measure of our estimate. Thus, if the hand is dipped into a basin of water the heat of which is 104° , and directly after into another at 90° , it will appear at first to be cold; but if the heat of the first is 68° , then the same fluid will seem to be lukewarm. The conducting power, however, as well as the specific heat of different substances, modifies very much the impressions they produce. If a series of rods, of the same form and size, but made of different metals, are placed in the same water-bath, or in the open air in the same room, they seem to the hand to have very different temperatures: those which conduct the heat from us the most readily appear to be the coldest; and *vice versâ*. To the same cause is to be referred the difference in the values of different kinds of clothing: the worst conductors make the warmest garments.

Our judgment of the *form*, and our estimate of the *roughness* and *smoothness* of various objects, are influenced a good deal by the feeling of that part with which they are in contact; but the impressions which they produce are rendered much clearer if the sensitive surface is allowed to glide over the substance to be examined. With this assistance the blind easily recognise very minute differences, and read so readily properly prepared tablets.

We have already seen that the *sense of touch* is limited to certain parts of our bodies; and that it is accurately toned and adjusted by habit and use for the ordinary purposes of life: and also, that the inconsiderable amount of feeling possessed by the vital organs, and other parts of the body, best fits them for their respective duties. Hence we may infer that every deviation from these conditions is unnatural: that all uneasy sensations are exceptions to a general rule: and that though we are susceptible of pain by a law of our nature, yet we are not condemned by the same law to suffer it. Suffering is no more a natural state of our

feelings, than disorder is a natural state of our bodies. It is the exception of a rule ; which, however, though it is only a casualty, if duly heeded, is a wise and merciful provision, to point out existing, and to warn us of more impending dangers. A faultiness of function would hardly rouse us to seek for a remedy, if it was not for the concurrent uneasiness. It is commonly by this that our attention is awakened, and by it we are guided in ascertaining the seat and amount of the mischief. The carelessness with which we often regard those uneasy sensations that precede actual suffering, is not an uncommon cause of its aggravation. If we disregard the warning, we can hardly hope to escape the penalty. The uncomfortableness of indigestion, the effects of wrong eating or over-drinking, long precede the painful attacks of gout ; but the transgressor will not amend. The headaches and vertigos of the too industrious student point out his danger, yet meet with little regard. The over-anxious merchant is told by his tongue, long before he becomes the subject of incurable disease, that he is wrong ; but he will not listen. How often the fluttering moth gets singed by passing and repassing through the attractive candle-flame, before it plumps finally into the melted fuel ! The edge of the thunder-cloud throws sufficient gloom to warn us of the coming storm. There was a finger-post at the stile over which you got into Bye-path Meadow, which told you that the way led not only to Doubting Castle, but to Trouble and Sorrow, to Head-ache and Heart-ache ; only you would not stop to read it. We are careless till we suffer, and then we upbraid the *nature of things*. We need not be unjust because we have been unwise.

P. S.

REVIEW OF THE MONTH.

THE frost which commenced in the middle of January, and continued till the 24th of February, will long be remembered in the annals of British meteorology. We are not aware that the temperature fell so low on any night as it did in the beginning of January 1854 (see "Excelsior," vol. i. p. 156), but with constant snow on the ground, and with a thermometer seldom rising to the freezing-point, the trial to animal life was very severe. The sparrows lay dead in the squares of London, and in the country creatures as hardy as the rooks fell victims to cold and hunger united. In different parts of the island cases occurred of persons frozen to death; and owing to bronchial and kindred complaints, there was a serious increase on the bills of mortality. Nor was it only on land that the deadly chill was felt. In the Edinburgh "Witness" of February 24, it is mentioned, that on the beach at Portobello cart-loads of the *Solen siliqua*, or edible razor-fish, and large quantities of the *Macra stultorum*, or fools' cockle, lay dead, the frost having penetrated into their sandy retreats at ebb-tide. The editor adds, "It is probable that both species will be less common on our coasts than heretofore for years to come; and their wholesale destruction by a frost a few degrees more intense than is common in our own climate, shows how simply, by slight changes of climate, induced by physical causes, whole races of animals may become extinct. It exemplifies, too, how destruction may fall upon insulated species, while, from some peculiarity of habitat, or some hardiness of constitution, their congeners escape. There are two species of *Solen* in the Firth *S. siliqua* and *S. ensis*, but we have not seen, on the present occasion, a single dead individual of the latter species; and of at least four species of *Macra*, the *Macra*

stultorum seems alone to have suffered." At Deal ice was floating about in the English Channel; and at Dover, a friend informs us, that in the moon-lit nights the fishermen went out and brought ashore boat-loads of enormous conger-eels, which they found floating on the surface in a state of stupor. According to the fishermen, "they had come up to look at the moon;" and, as in the case of the burrowing molluscs at Portobello, it would be curious to know the reason why the congers were more affected than other fishes. Nothing showed the intensity of the cold more strikingly than the length of time which was required for the powerful thaw to penetrate. For upwards of a fortnight after it began, many houses in the capital remained with their water-pipes firm frozen; and it is not likely that the present generation will witness a recurrence of the anomalies, grave and gay, of so extreme a season.

After a reign of nearly thirty years, the Emperor Nicholas expired at St. Petersburg on the 2d of March. There can be little doubt that in his person a great impediment to the peace of Europe is removed; but there is a Russian policy, independent of the life of any Czar,—the policy of Peter, Catherine, and Alexander, as much as Nicholas,—a policy of first weakening and then devouring every neighbour. And for the security of Europe and the welfare of the world, we should like to see cut off Cronstadt and the Crimea,—the iron claws which cater for the great Muscovite crustacean.

The net revenue paid into the British Exchequer during 1854 was 56,737,133*l.*; and the expenditure was 59,946,192*l.* During that year 323,112 of the inhabitants of Great Britain and Ireland emigrated, being at the rate of nearly a thousand a-day, of whom the majority (192,993), went to the United States. In England, on January 1, 1855, there were 839,164 paupers receiving parochial relief.

Dr. Stenhouse, of St. Bartholomew's Hospital, has published a valuable lecture on the use of charcoal as a disinfectant. Charcoal has long been employed as a filter to free water of its impurities; Dr. S., with a similar view, employs it in filtering air. He has contrived a respirator of powdered charcoal, the wearer of which may breathe with impunity the foulest or most infected atmosphere; and in regions where the air is tainted, as in pestiferous intertropical districts, or where the miasmata of ague, yellow fever, &c., abound, he recommends the use of charcoal ventilators. "Effluvia and miasmata are usually regarded as highly organised, nitrogenous, easily alterable bodies. When these are absorbed by charcoal, they come in contact with highly condensed oxygen gas, which exists within the pores of all charcoal which has been exposed to the air even for a few minutes: in this way they are oxidised and destroyed." As a sort of *experimentum crucis*, Dr. S. covered over a dead cat with a layer of powdered charcoal, about two inches thick, and kept it in his laboratory a year, but no perceptible odour escaped. The application of this simple expedient to the lower decks of ships, to churchyards, hospitals, &c., is abundantly obvious.

We have lying before us an elaborate volume, "Bengal as a Field of Missions. By M. Wylie, Esq., First Judge of the Calcutta Court of Small Causes." As the production of a layman, of a resident, who has had rare opportunities for observing and judging, and of a Christian philanthropist, who has brought to his survey a mind of eminent comprehensiveness, acuteness, and candour, this work is invaluable. It will be eagerly welcomed and earnestly pondered by those who value exact information, and who feel the transcendent importance of the subject.

From Messrs. Johnstone and Hunter we have received an edition of the Scottish Psalms, accompanied by upwards

of two hundred tunes, any one of which, by means of a new and ingenious contrivance, can be brought under the eye on the same page with any one of the hundred and fifty psalms. Of course, this clever expedient may be applied to any other version of the Psalms, or any hymn-book.—Encouraged by the success of their beautiful edition of Dr. John Owen, we are glad to see that the same enterprising publishers are preparing to issue, on a similar plan, the works of John Howe, with the Memoir by Henry Rogers revised.

Since the pen dropped from Johnson's kingly grasp, we have had few worthy Lives of the Poets. Practically, Keats and Shelley are still without record, and an unskilful biography was more injurious to the memory of poor Pollok than the unkindest reviewal could have been. A terse memorial, elaborated after the fashion of his own exquisite lyrics, would have done more for Campbell's fame than the three heavy tomes which now oppress his sepulchre; and if Wordsworth's renown has sustained no detriment from a similar indiscretion, it must be because the reader is so soon sent to sleep under the mesmerising influence of prosaic minutiae. Nor will the success of Moore's Journal, with its puns and bon-mots, encourage any following bard to "attempt" his own life. With all our love and tenderness for Montgomery's memory, we were alarmed by the portentous scale on which his history was projected; and the perusal of the two volumes already published has verified our fears. There is *matériel* enough for some fifty or a hundred pages of interesting narrative; but spread over a surface so disproportionate, it has become extremely flat and prolix. A subject which would have made a charming cabinet-picture may appear quite absurd on one of Haydon's vast canvasses; and of all men really good and gifted, few occur to our recollection less adapted for a Boswellising biography than this mild and gentle minstrel.

MY BROTHER'S KEEPER.

[The reader must imagine some changes of time and place. Rosalie and her sister are staying at a farm-house in Massachusetts. Thornton has gone off to the camp with his company, and, having been nursed through a severe sickness by Henry Raynor, he has now joined his sisters at White Oak.]

If Thornton had never before seen the perversity of human nature he had abundant cause now. Much as he had wished to be with his sister, often as he had resolved that for the future she should have no reason to complain of him—that he would be at least part of her happiness,—it seemed as if when the trial came every current set the wrong way. He had wished to prove to her that he was as good as other people, and he was worse than himself.

Rosalie spent her strength upon him most unweariedly ; though less in doing than in watching,—in trying to amuse him, in hoping that he would be amused. But her efforts met with little success. A cloud of moodiness had settled down upon Mr. Clyde, and he seemed in no mind to come out of it. Indeed his attempts at coming out were rather unfortunate, and were as apt to land him in a fit of impatience as anything. His mind was not fitted to bear up against weakness of body—or was itself out of order ; and either craved old associates or the other extreme of something new. Nothing satisfied him, not even Rosalie's watchful love ; though he was more ready than of old to appreciate its working ; but if he shook off his moodiness at all, it was generally with such a fling as sent a reminder of the mood into the face of every one present—after which he relapsed tenfold. And though quite able to ride or to walk

in moderation, he was with difficulty persuaded to do either ; and nature's sweet influences had small chance to try their hand upon him.

'Are you sure it would not do you good to go out?' Rosalie said one day as he sat by the fire. 'I am so sure that it would.'

'What use?' said Thornton. 'I can imagine pigs without the help of eyesight.'

'You cannot imagine sunshine,' said his sister, with a playful attempt to make him raise his head and look out.

'No—nor feel it if I go. There is nothing to see here.'

'But there you are mistaken. There is a great deal that is worth seeing.'

'Probably—to canary birds,' said Thornton.

'O there are a great many birds here,' said Hulda. 'Sparrows, and robins, and'—

'Take yourself off to their neighbourhood then—or keep quiet,' said her brother. 'You must not talk if you stay here. Why don't you go and pick up apples with Martha as you did yesterday?'

'Because Martha's talking to Tom Skiddy,' said Hulda, 'and I don't like to.'

'When they have talked each other into a wedding they will be easy,' said Thornton.

'Ask Jerusha to go with you Hulda,' said her sister. 'Take my little basket and fill it for me, and by and by I will walk with you.' And as Hulda left the room Rosalie came and knelt down by her brother.

'What is the matter with you dear Thornton? You will never get strong in this way, and it troubles me very much.'

Thornton put his arm round her and drew her head down upon his breast.

'You are not more tired of me Alie, than I am of myself.'

‘I am not tired of you,’ said his sister weeping, — ‘you know that.’

‘I should think you might be. Why don’t you go and take care of Mr. Raynor, and leave me alone?’

She was silent a moment.

‘Why do you ask me such a question?’

‘For the pleasure of hearing you answer it.’

‘That would not make me happy.’

‘Then what would?’

There was answer even in the slight movement of her head before she spoke.

‘What would?’ Thornton repeated.

‘To see you what I call happy, I believe,’ said his sister.

Thornton drew a long breath—or rather breathed one out—as if that were a thing he might whistle for sooner than get; and for some time there was not a word spoken. Then Thornton began again.

‘I used to wonder sometimes, in those long hot nights when I lay sick in my tent, that he did not administer poison instead of medicine. And sometimes I almost wished that he would—then you would be taken care of, and I should be in nobody’s way.’

‘I am sure he never suggested that last idea,’ said Rosalie.

‘No, to do him justice,’ said Thornton, ‘he never mentioned your name unless I did. And he took as tender care of me as if I were his own brother—or perhaps I should say yours. There was no make believe in it though. Yes Alie, I was forced to give up my dislike, and to agree to all the praises you would have spoken had you dared. He is a man to trust.’

There was pleasure in hearing these words,—but for the cold, unenjoying tone, Rosalie would have felt it strongly. As it was, the pleasure was qualified; and her quiet

'I am glad you think so,'
told of both feelings. She waited long for Thornton to speak again, but his lips did not move; and slowly she arose and went to give Hulda the promised walk: her voice and eye following the child's merry pranks, and all her thoughts left at home. She could hardly have told whether the walk was long or short, and most like her brother could not; for when Rosalie again entered the sitting-room he had not stirred from his former position—had not even changed the hand which supported his head. Rosalie came up and laid her hand on it, but the soft touch called forth no words, and in silence she sat down to await the coming in of tea. The meal passed with equal taciturnity; Hulda went to bed, and Rosalie sat down as before—her eyes apparently seeking counsel of the little wood fire, which flashed into their bright depths with great vivacity. How grave they were, how thoughtful! catching none of the fire's dance.

'It strikes me,' said Thornton suddenly, 'that you and I have done thinking enough for one night, Alie. What say you?'

'I don't know.'

'Why don't you know?'

'I suppose,' she said, with one of her fair looks up at him, 'I suppose if we have been thinking unprofitable thoughts, it might be well to give the mind some better refreshment before the body takes its own.'

'What do you call unprofitable thoughts?' said Thornton.

'Fruitless ones—or such as bearing fruit are yet shaken off too soon, before it be ripe.'

'You have covered the whole ground for me,' said Thornton. 'I had better begin again. I wonder if yours have been worth a silver penny?'

'Not to you—and some of them more than that to me.'

'Suppose you were to indulge me with the hearing

thereof,' said Thornton—'just by way of a lesson in fruitful thinking.'

'Truly,' said his sister, 'my best thoughts were not my own, but drawn from a little hymn of Wesley's.'

'Give us the hymn then,' said Thornton. 'Are you the only alchymist who can fetch gold from thence?'

'The gold is of an ancient stamp,' said his sister sadly, 'and little thought of in the alloyed currency of this world; for it bears the impress of the first commandment—not "*Cæsar's image and superscription.*"

" Lord, in the strength of grace,
With a glad heart and free;
Myself, my residue of days,
I consecrate to thee.

" Thy ransomed servant I
Restore to thee thine own;
And from this moment live or die,
To serve my God alone." "

Thornton looked at his sister while she repeated these words,—felt that she had found the gold, that it was in her hand—and knew that his own was empty. And why? He was ready to say it was so because so it was to be; but those words came back to him again—

" With a glad heart and *free* "—

and to none had Rosalie's face given more strong assent and effect.

'Do you like it, Thornton?' she said, drawing up closer to him.

'Seems like pure metal, my dear,' he answered carelessly. 'I presume my ready money would scarce exchange for it without a pretty heavy discount.'

Rosalie looked at him, as if she thought and truly that just then he was counterfeiting; but his face gave her no

invitation to speak, and her eyes went back to the fire. When she turned to him again, however, and somewhat suddenly, he was regarding her with a grave abstracted sort of look, as if from her his thoughts had taken a wide range: not into the pleasant regions.

'What can you possibly be musing about, Thornton?' she said.

'There are a great many things about which I could possibly be musing, Alie.'

'Only that you were not apt to muse at all.'

'I doubt I am getting into bad habits then—you are such a muse-inviting little object.'

'Am I?' said Rosalie smiling. 'What ideas do I suggest?'

'Various ones of human perfection.'

'"*The spirits of just men made perfect*,"' Rosalie said. 'That will be a fair thing to see!'

'For those that see it,' said Thornton with some bitterness. But he wished the words unsaid—her quick look up at him was so humble, and at the same time so full of pain.

'What makes you speak so, Thornton?'

'What makes you look so, Alie?' he said with his old light tone. 'It is not possible that you think *all* men need perfecting? The gentleman who took care of me so lately, for instance—how *could* he be any better than he is? I am afraid you undervalue him.'

'O Thornton! I cannot jest with you after such words.'

'Jest! no,' he said, but something in her eye checked him,—he turned away and rested his head on his hand as before. Rosalie came and laid her hand on it again—laid her cheek there too, but he did not move.

'What troubles you, brother?'

'Why do you suppose that anything does?'

She did not answer—as being needless, and he added,

‘You had better go to bed, Alie—take care of yourself, my dear, if you cannot of me. I feel as if I had you in trust.’

‘Only me?’ she said sorrowfully.

‘Only you!’ said Thornton rousing himself, for the implication was not pleasant. ‘You are a reasonably precious trust, some people think. And I shall have to account pretty strictly for all the pale cheeks that you carry back to town.’

“*And every one of us shall give account of himself to God,*” she answered in a low voice, her lips touching his forehead. But she waited for no reply, and left the room.

For the first time since he had been there, Thornton went softly in to look at her when he went up stairs as she lay asleep; as much perhaps because he was tired of himself, and tired of remembering his own existence, as anything. And certainly if contrast could make him forget, the end was gained.

Existence had been no burden to her, and life no failure—what though it was crossed with anxieties and disappointments,—they were all according to that higher will to which hers was submitted. Life could be no failure,—the purpose of God must stand, and she wished none other.

It was a strange point to reach, Thornton thought, as he stood watching her calm face, and felt that whatever shadows lay there came not from discontent. Could he ever reach it? was it not rather of nature than of grace? It was easier for a woman—with her gentler spirit and its few outlets. There came up before him the image of one whose nature was at least as strong as his own, in whom manhood was not better grown than Christianity; but he put it away and looked at Rosalie. And then with a bitter wish that he were like her—or like anybody in the world but himself, he

stooped down and softly kissed the lips whose repose he so much envied.

They stirred a little, though he caught no words, and with a long sigh Rosalie folded her hands upon her breast as if she were making a last appeal. Then they relaxed and lay quiet as before, and the lips were still; and Thornton went away with a quick step, feeling that from her his questions could get no answer such as they wished. Any excuse—any belief which would throw the responsibility off himself, he could bear,—he could bear to be unhappy and discontented, so it touched not his own omissions. If he could have persuaded himself that he was *necessarily* restless and ill at ease, it would have gone far towards curing the evil.

‘What nonsense!’ he repeated to himself again and again—‘I never could quiet myself down to her temper, if I tried all my life’—and then he remembered that he had never tried for one day.

This was not the way to get to sleep, however, as he sagely remarked; and having banished all grave thoughts with such vigorous efforts as he would not have bestowed upon acting them out, sleep followed—unbroken till Sunday morning had dawned, and its atmosphere of rest lay over the wide landscape.

There were sounds astir—but all sweet, all soothing. The twittering of the birds, the tinkle of the cow bells as their four-footed wearers wound slowly along the meadow-course of the brook,—a hum of voices from the chip yard, where Martha and Tom were comparing notes with Jabin,—and nearer still a voluntary from Hulda—who standing out in the sunshine sang her morning hymn with birdlike freedom and enjoyment. When another voice joined hers, and gave strength and clearness to the tune and distinctness to

the words, Thornton closed his window and betook himself with great earnestness to the business of dressing.

But though that business was finished with much elaboration, Thornton would not go to church ; and Rosalie staid with him. Everybody else went, and the house was left in utter solitude ; with windows closed and doors bolted, and Trouncer the old bull-dog lying in the porch with his nose between his paws.

Rosalie persuaded her brother to come out to the edge of the dell and spend the morning there ; where the brook's soft rush at their feet and the bird notes up in the air, were all the interruptions. She had her Bible in her hand and sat down to read ; but Thornton sat leaning against an old hickory tree, with his eyes sometimes shaded by his hand and sometimes by an unseen cloud. And so they remained ; with the sweet Sabbath bell sounding forth in the distance and answered by another still further off, until the last ring floated away on the pure air and all was still.

Rosalie had closed her book for listening, and now sat with closed eyes, as if too many senses were disturbing. Her brother watched her, unconscious of his gaze or that he had even raised his head.

Her face was at rest, as of one asleep after a weary world ; for the bells with their suggestions and associations had half done sleep's work. But strong effect was given to the very delicate tinting of her face and its too delicately drawn lines, by those very grave ones in which the mouth was set,—that had not relaxed. Yet as Thornton looked it did relax—and with a slight trembling of the lips there came one of those tearful smiles that just shewed itself and passed away.

‘Rosalie !’

How the face changed, how the weary look came back

he saw as she turned towards him ; her eyelashes yet wet with the drops of that sun-shower.

‘Do you see that brook ?’ Thornton said.

‘Certainly.’

‘Wouldn’t you like to follow its course out into the open sunlight ?’

‘I have done so many a time.’

‘Is it a pretty walk ?’

‘Pretty and thoughtful both, to me.’

‘Take me up the stream of your thoughts from the sunshine that was upon your face just now.’

She looked at him and then down at the brook.

‘It would be a more thoughtful walk than the other.’

‘No matter—take me. Whence came the sunshine ?’

Again she looked at him, and away from him, but the eyes filled as she answered,

“*Hitherto ye have asked nothing in my name: ask, and ye shall receive, that your joy may be full.*”

Thornton was silenced. If he had expected Bible words it would not have been these ; and he spoke not again for some time. His sister sat looking down at the brook as before ; and it rippled and ran along, and flung its foam hither and thither with a wild hand.

‘Do you believe that, Rosalie ?’ he said at length.

‘Surely !’

The look was brilliant.

‘Have you never asked for what you were wishing yesterday ?’

Her eyes fell, and her lips could form no answer.

‘Then why is it not done ?’ said Thornton, with an effort to keep his own firm.

She paused a moment, as if to steady her half choked voice, ere she answered. ‘Because I have not waited

patiently, I believe. Because, "*to them gave Jesus power to become the sons of God, even to them that believe on his name.*"

Thornton was silenced again, and his sister sat still for a few moments with such a wavering play of thought and feeling upon her face, as was like the shadowy leaf-tossed light upon the brook. And then after one glance at him, coming quickly to him and almost before he was aware, her arm drew him down to a place by her side, and her voice spoke words for him that bowed down his heart like a bulrush. And with the belief the power came. He was a changed man.

* * * * *

'How long are we going to be here, Alie?' said Hulda as they sat at tea.

'I do not know—you must ask Thornton.'

'How long?' Hulda repeated, looking at him.

'I do not know.'

'But that's very funny!' said Hulda.

'I am not sure but I shall go to New York for a week or so before you do, Rosalie,' said her brother.

'What for?'

'O sundry things. I must see Marion—give the required promise and make her redeem her own.'

'Not till I come?'

'No, not that. But there are other matters to arrange. At what time in the future is the Quakerage to be blessed with a new queen?'

'I am sure I know not,' said his sister as composedly as she could.

'I believe,' said Thornton, 'that in a voluntary change of dynasty it is usual for the reigning power to withdraw to another court,—else might the new comer be branded as a usurper. And I am not sure that it is best for you to give

Marion any lessons in the science of government. She rather needs guardianship herself.'

'She will have it now,' Rosalie said; the warm flush of joy and thankfulness coming over her face.

'Better than she once could, I trust,' said Thornton gravely. 'O Alie! my dear child! what a guardian *you* have been!'

'Not I—' was all she could answer; and Hulda looked wonderingly from face to face, and saw the one not less stirred than the other.

'I was not so selfish as I seemed,' Thornton said, when they left the table and stood musingly before the fire. 'I knew you gave up a great deal for me, but I did not know how much. I could not, without knowing Henry better; and by keeping him at a distance I partly kept off the belief of some things that concerned him.'

'Who is Henry?' said Hulda, who had been watching for some word which she could understand.

'Your friend Mr. Raynor. Of whom his mother justly remarks, there is but one in the world.'

'I wish he would come here,' said Hulda. 'I want to see him very much.'

'So do I,' said Thornton. And bringing a chair to the fire he sat down and took Hulda on his lap.

'How would you like to live with him, Hulda?'

'Live with him!' cried Hulda. 'What all the time?'

'Thornton'—Rosalie said.

'Be quiet Alie, and trust me for once. Well Hulda?'

'I don't know what you mean!' said the child with a very puzzled face. 'I *couldn't* leave Rosalie.'

'Put Rosalie out of the question.'

'But I shouldn't want to leave you, now,' said Hulda, her eyes looking up to his with all the enjoyment of trust.

She little knew how straight both look and words went

to her brother's heart, nor guessed the meaning of the quick breath he drew in that moment of silence.

'I think we must arrange a compromise, Alie, don't you? How would you like then Hulda, to live half the time with Mr. Raynor and half the time with me? Or would you rather live half the time with Rosalie and half with Marion?'

'But then there'd be nobody to take care of Rosalie,' said Hulda. 'And if I lived with you and Mr. Raynor there'd be nobody to take care of me.'

'You know your lesson sufficiently well,' said Thornton laughing. 'What do you say, Alie?'

She did not say anything; but sat there on a low seat by the fire, reading histories in its bright play, until Hulda was ready to go to bed; and then went with her, and returning softly sat down as before.

'Why don't you answer my question about the Quakerage?' Thornton said, moving his seat close to hers. 'Am I bound to learn it first from another quarter?'

'I cannot tell you what I do not know myself, dear Thornton.'

'Yes, but upon whose decision does your knowledge wait?'

'I cannot decide upon anything to-night—and I would rather talk on some other subject. Rather think of the end of life than of its way.'

'You are not well,' Thornton said, putting his arm round her and drawing her head down upon his breast.

'Not perfectly—or else I am a little tired.'

He stroked her forehead and stooped down and kissed it, and then sat looking at her in silence. But after a few moments she looked up and smiled.

'I believe I am tired—that need not hinder our talking.'

'What shall we talk about, precious one?' he said.

'What were you thinking of, with your eye upon the fire? What did you see there? an ideal presence?'

'No,' she said with a faint colour—'at least not when you spoke to me. I was thinking of the journey through the wilderness. "*Thou shalt remember all the way which the Lord thy God led thee these forty years in the wilderness, to humble thee, and to prove thee, to know what was in thine heart, whether thou wouldst keep his commandments or no. And he humbled thee, and suffered thee to hunger, and fed thee with manna, which thou knewest not; that he might make thee know that man doth not live by bread only, but by every word that proceedeth out of the mouth of the Lord doth man live.*"'

'And then?' Thornton said.

'Not much else,' she answered with that same little flush. 'I was thinking how even Moses desired to see the promised land in this world.'

'What has come over you to-night, Alie?' said her brother. 'When did this world's land of promise ever make you forget the better country?'

'It is easier given up in the wilderness than on the borders of Canaan. But if the Lord hath said, "*Let it suffice thee concerning this*"—good is his word which he hath spoken. "*The Lord is thy life, and the length of thy days*"—how true that is!'

'Rosalie,' said her brother with a look that was both fearful and wondering—for she had raised her head again, and was eyeing the fire in the same intent and abstracted way; 'you are tired, you are not well. Let me carry you up stairs now, and to-morrow you may talk more of these things.'

'I believe I am tired,' she said again, but without moving,—'my mind feels tired. Tell me something to rest it. Words of comfort are so sweet from you.'

‘ And my knowledge of them is so small compared with your own, Alie. You must not let even part of this be true of you, dear—it was all true once of me.

‘ “ My people hath been lost sheep—they have turned them away on the mountains : they have gone from mountain to hill, *they have forgotten their resting-place.*” ’

As if a cloud had rolled away from before her eyes, so did Rosalie look up at him,—a child’s very look, of quietness and peace.

‘ I will not forget it,’ she said. ‘ “ *For thus saith the Lord, the Holy One of Israel : In returning and rest shall ye be saved ; in quietness and confidence shall be your strength. And the work of righteousness shall be peace ; and the effect of righteousness, quietness, and assurance for ever. And my people shall dwell in a peaceable habitation, and in sure dwellings, and in quiet resting-places.*” ’

The words were spoken clearly and strongly, though rather as if thinking than speaking ; but as she rose then to go up stairs the colour faded swiftly from her cheeks, and laying her hand on Thornton with a confused look, sense and strength failed together.

Thornton carried her up stairs and laid her on the bed, and toil-hardened hands tried their gentlest powers about her ; but when at length paleness and unconsciousness yielded to their efforts, it was to give place in turn to a brilliant colour and a fevered sleep.

In silence Thornton sat by her through the night,—remembering with intense bitterness the years of her society that he had shunned, and feeling that whatever might be the effect of this sickness he could not say a word. The women went softly about the room, attending to the fire and bathing the poor sleeper’s forehead and hands ; but whatever words they spoke were scarce whispered out, and Rosalie’s quick breathings fell on her brother’s ear without interrup-

tion. How he wished her away from there,—with her own physician, in her own home—with other friends within reach. Such skill as could be found in the neighbourhood was called in, and pronounced her disease to be a slow fever; more tedious than dangerous unless it should take some special type, but requiring constant care and watchfulness. And until the day came streaming in through the windows, Thornton hardly removed his eyes from her face.

How cold the daylight looked ! how cheerless ; and yet the sun shone brilliantly clear, and the tufts of autumn leaves with which the trees were spotted shewed their gayest tints ; and the birds sang and twittered their merriest. But the contrast was lost upon Thornton, for his eye and ear took little note of anything but Rosalie ; and the morning came on, and the women went softly in and out, and he scarce noticed them nor heard their low consultation.

At length Mrs. Hopper came up to him.

‘ Mr. Clyde,’ she said, ‘ the very best thing you can do is to go where you can be o’ some use. You can’t do her the least bit o’ good stayin’ here, and that poor little soul down stairs ’ll cry her eyes out afore long, if there don’t some one speak to her.’

Thornton sprang up instantly and left the room, remembering that Rosalie would never have forgotten anybody as he had forgotten Hulda : even in her deepest sorrow.

‘ How far, how very far she is on the way which I am but beginning to tread,’ he thought as he went down stairs.

Hulda was in the sitting-room, crouched down on the floor in one corner, pouring out a flood of sorrow that was exhausted only in its tone,—there was no stay to the tears. And when Thornton raised her up in his arms and tried all his powers of soothing and caressing, the child shook all over in the violence of her grief.

‘ They won’t let me see her !’ she cried. ‘ They won’t

let me even go into the room ! And I wouldn't make the least noise—and oh I know *she* would let me !'

'Do you think you could keep perfectly quiet?' Thornton said, putting his face down by hers.

'O yes ! O yes !'

'Then I will take you up there ; but first you must wait a little, for Rosalie would be troubled to see all these tears. I am going to write to Marion to ask her to come here, and you shall sit quiet on my lap till that is done.'

'Do you think she will come !' Hulda said, as she watched the rapid tracing of his pen, and tried the while to seal up her tears.

'I am sure that she will.'

And almost tired out, Hulda lay drooping on his neck until more than one letter was written and folded, and he was ready to take her up stairs.

She kept her promise of quietness,—shed no tears unless silent ones, and sat on Thornton's lap or stood by his side in perfect stillness, as long as he would let her. And when he knew that she ought to be out in the fresh air, and told her so, and begged her to go with Martha,—Hulda's mute distress was so great, that there was no help for it, he must take her himself.

It was a lesson for him, all this,—he began to try his hand at self-denial, and to learn the lesson which Rosalie had so long practised. True his watching eyes could do her no good—both days and nights were passed in the restlessness or the sleep of fever, and often she seemed hardly to know him. But for himself, what comfort anything on earth could give he found at her side. And now he must devote himself to another's comfort—must walk with Hulda and talk to her and bear with her, and keep her as much as possible out of the sick room. He could not in conscience let her be in it, and to send her out with Martha plunged

Hulda into the very depths of grief. Sitting on her brother's lap with her arm round his neck, and probing his distress with her earnest questions,—walking with him—hearing him read, and never failing to bring up Rosalie's name at every turn, she was comparatively cheerful. It was something new for him—something against his whole nature and experience. And nature rebelled. But as if they had been stamped on his mind, checking every impatient thought and word, bidding even sorrow and weariness give place and bide their time, these words were ever before him—

"For even Christ pleased not himself,"—and "If ye love me, keep my commandments."

If Hulda mourned her sister's illness, it was not because her brother ceased trying to fill her place.

* * * * *

[Accompanied by Dr. Buffem, Mr. Raynor had made a rapid journey to White Oak, and arrived after midnight. But the patient was already beginning to amend. Coming down to breakfast,]

'All right and sweet and comfortable,' said the doctor. 'I may go back to New York as fast as I came; or now I think of it, more leisurely,—being at my own risk. You do not go with me, friend Henry?'

'No sir.'

'I think you will be equal to any emergency which may arise,' said the doctor. 'And now, my dear sir, breakfast! It's ill travelling without the staff of life.'

'And if Rosalie goes on steadily improving, when would it be safe for her to return to New York?' said Thornton, as they took their seats at the table.

'New York?—*fal de rol!*' said the doctor. 'Don't bring her back to brick walls till she's able to climb 'em. She's seen enough of New York for one while. The minute she can stand alone take her off for change of air and scene

—jaunt about a little—go South, if you like; but don't let her see New York these three months.'

The doctor mounted his horse and rode away, and the other two gentlemen stood somewhat thoughtfully looking after him. Mr. Raynor spoke first.

'What are you thinking of, Thornton?'

'Doctor Buffem's orders.'

'I will see them carried out,' was the next grave remark.

'You shall, if I have any voice in the matter.'

'Say nothing about it now.' And nothing was said, even before Mr. Raynor went back to New York himself for a week.

But one afternoon at the end of that week, when Rosalie was well enough to sit up in a great chair by her wood fire, and all the rest had gone out for a walk; that peculiarly quiet step might have been heard on the stairs—if indeed it had made noise enough.

Quietly he went up, and quick, for that was his custom; but his foot slackened its pace now on the upper stairs, and as it reached the landing-place stood still, and his breath almost bore it company. Martha had gone down a few minutes before, leaving Rosalie's door half open; and thinking all human ears far away—with the perfect stillness of the house—she was singing to herself in the fading sunlight. Singing softly, and in a voice not yet strong, but with such clear distinctness that the listener caught every word.

He waited till the hymn was finished—waited for another, but it came not; and still he lingered, as if there were a halo about her he liked not to break. Then a quiet knock at the open door, a quiet word of admission, and whatever effect he charged upon his presence the room looked no less bright to her.

'Does thy song betoken strength?' he said.

'Only weakness—of that kind which craves a strong support—and rests in it, and delights in it.'

'Wilt thou make use of my strength, such as it is?' said he smiling. 'I would fain bestow it upon thee.'

'Having more than you want?'

'A little surplus which I should like to see invested.'

'I should think business might call for it all,' said Rosalie. 'How are affairs on Long Island?'

'In the old state of quiescence. I have left Penn in charge of my department.'

'For the present, I suppose.'

'For the present and future both. I am going South.'

'South!' said Rosalie. 'You?'

'Yes,' said he smiling. 'Not without you.'

She looked quickly up at him, then down again, but she heard the same smile in his next words.

'Will that direction suit you?'

'Are you so intent upon journeying, Mr. Raynor, that you can talk of nothing else?'

'Question!' he said with the same tone.

'The first letter of a new alphabet is not to be lightly spoken.'

'That was the second letter; this is the first—When do you expect to come down stairs?'

'I shall have to consider of that,' she answered.

'Let not the consideration be too long, or I may take you away before it comes to an end.'

'I think you are merry to-night, Mr. Raynor.'

'With reason.'

'But if you take up my words so,' Rosalie said, 'I shall not be able to say what I wish.'

'I do not wish you to say anything,' said he laughing, —'I merely came to say something to you. For the rest of

the evening you may think and not speak. It is always well to know what one has to do; and this, dear Rosalie, is not to be reasoned against nor reasoned away;—therefore, think not so much as may trouble thee. Goodnight.'

Tom Skiddy stood out in the chip yard next morning, and Miss Jumps in her old position with her hands behind her, stood leaning against a tree and watching him. The frost lay upon every chip and blade of grass to which the sun had not yet paid his morning visit; and lurked in corners and by fences, secure for some time from his approach. The trees were in the poverty-stricken livery of November—some thinly clad, the most not clad at all; and with every rustle of the wind there fluttered down some of the remaining leaves, crisped with last night's frost.

Tom was elaborately dressing out a knitting-needle from a strip of red cedar, while the companion strip lay on a log hard by.

'How would you like to go South, Tom Skiddy?' said Martha.

'Fur south as Connecticut I shouldn't object to,' replied Tom.

'That aint South,' said Martha; 'Connecticut's north when you're in York. I mean South that aint north no-where.'

'Guess likely I shouldn't care about it,' said Tom.

'Well what'll you do supposen the Capting goes?'

'He won't,' said Tom.

'Now how do you know, Tom Skiddy?' said Martha.

'I tell you he won't,' repeated Tom.

'And I heard the doctor say, "Take her South," with my own ears,' said Martha. 'You don't s'pose the Capting'd make any bones about it after that?'

'Can't he send no one else?' said Tom.

'He might, I do suppose,' said Martha,—'that's smart

o' you, Tom Skiddy. 'O' course everybody knows what *he's* stayin' here for. But then if Miss Rosalie's goin' in for the Quakers, I aint agoin' with her—that's one thing. Couldn't—not for nuts.'

'You can find somethin' else to do, I s'pose?' said Tom, taking up the square stick of cedar.

'Most like I can—' said Martha,—'spry folks like me don't want for work generally.'

'I should think you might,' remarked Tom, measuring the two pieces. 'Nice fit, aint it?'

'Sort o'—' said Martha,—'one of 'em's rough enough for two, and big enough.'

'That's all along o' what's been done to t'other,' said Tom, beginning to work at the square stick.

'Some odds in the stuff, aint there?' said Martha.

'Not much,' said Tom. 'Both out o' one stick. One was further out and t'other further in—that's all.' And Tom whittled away assiduously, while Martha looked on in silence.

'Goin' to make 'em both alike?' she inquired.

'Just alike,' said Tom, 'being knittin'-needles. They're different shades o' red though. I don't care about seein' two things too much alike, if they *have* got to go together.'

'Such as what?' said Martha.

'Horses,'—said Tom,—'and folks. You and I always worked better, Martha, for having such a variety between us.'

'Well, I do' know but we did,' said Martha musingly.

'Just about what you call a fine match, we are, I think,' said Tom.

'Are!' repeated Martha, with a little toss of her head.

'Well, might be, then,' said Tom.

'I don't know about that,' said Martha. 'It mought, and it mought not, as folks used to say where I was raised.'

'So they did in my town,' said Tom, 'but then they always fetched up with "and then again it mought." I shouldn't mind making the experiment, for one.'

'I wouldn't be venturesome, Tom Skiddy,' said Martha, with her head a little on one side and leaning against the tree.

'I'll risk it,' said Tom.

'Well now!' said Martha.

'What's come over you to be so skeery?' said Tom. 'You're as bad as our white colt, that used to always shy afore he went through the bar-place.'

'I might be worse'n that,' said Martha. 'I might shy and not go through the bar-place after all, Tom Skiddy.'

'That aint the fashion of colts,' said Tom. 'They wouldn't get paid for their trouble.'

'Well suppos'n I shouldn't get paid for going through?' said Martha.

'You would,' said Tom, shaving off thin slices of the red cedar.

'Sure?' said Martha.

'Sartain,' said Tom.

'Time I was in the house, I know,' said Martha; and in a very deliberate way Miss Jumps picked up her sun-bonnet and walked off towards the back door.

'Goin' through the bar-place?' said Tom.

'Maybe,' returned Martha. 'You're so good at making up things—s'pose'n you try your hand at some more.'

* * * * *

If anything could have made Mrs. Arnet deeply unhappy, a letter which she received from her daughter early in November would have done it. Fortunately nature had placed her beyond much risk of that sort, but discomposure she did feel in abundance.

'You must come here if you wish to see the grand cere-

mony of my life, mamma,' Marion wrote; 'for here it will take place. Thornton wishes it, and so does Rosalie; and I am but too glad to be spared the great New York fuss which you would think indispensable were I there.'

Indispensable!—the word came back from the very bottom of Mrs. Arnet's heart; which was however not so far off as it might have been. But married up there! in a country kitchen!—for what had any farmhouse but a kitchen;—the idea was overwhelming, and yet there was no help. There was time for her to reach them, but not to make them change their plans; and on the whole Mrs. Arnet concluded she had better stay at home. The mere ceremony was not much, and if she went away there would be no prepared fuss against their return; whereas by a diligent use of the time between now and then, she could do much to repair the mischief. Therefore she would not go.

Neither could Mrs. Raynor be present. So she wrote; the journey at that time of year and of her life seemed too much.

'I give thee up, dear child,' she said, 'as fully and freely as if there. I always thought thee too good to be mine alone. But go to thee I cannot; therefore come not for me.'

And so the night before that morning in November there was 'nobody but just their four selves,' as Mrs. Hopper said, in the sitting-room. Hulda had been there to be sure, in such a mixture of pleasure that she was to be with Marion for a while, and sorrow that Rosalie was going away, and joy to think of living always part of the time with her and Mr. Raynor too; that she was sometimes absolutely still, and sometimes flitted about like a very spirit of unrest. But now she had gone to bed and all was quiet. Quiet but for the sweeping remarks of the wind; and they were so general that nobody thought of answering them.

The brother and sister were much in each other's thought ; and could the thoughts have been read they would have told of

—" All that fills the minds of friends
When first they feel, with secret pain,
Their lives henceforth have separate ends,
And never can be one again."

Perhaps the faces revealed so much ; for of the other two present, one was unusually grave, and the other at least as usual. But he was the first to speak ; not in a particularly grave way, but rather playfully—as if willing with a light hand to attach and wind off the long threads of thought in which his companions had enwrapped themselves. And thus he spoke :

———" Knowledge dwells
In heads replete with thoughts of other men ;
Wisdom, in minds attentive to their own."

' Which would prove us all sages,' said Miss Arnet.

' Not all—' said Mr. Raynor. ' My attention at least was not turned within.'

' Nor mine,' said Thornton.

' No,' said his friend ; ' you have come near disproving the other line :—

" And whistled as he went for want of thought." '

' Why ?' said Thornton laughing.

' You have given the fire so much, so meditative, and so needless attention.'

' So fruitless also,' said Rosalie.

' Very well,' said Thornton ; ' but I have not been so lost in meditation as to miss the glances stolen at us all from under cover of your eyelashes, little Sweetbrier.'

She smiled, but the playful lines quickly composed themselves into graver fashion than before.

'I am thinking, Alie,' said Thornton, 'what you will do without some one to take charge of.'

'She may take charge of me,' said Mr. Raynor.

'You !' said Thornton.

'Well ?' was the quiet reply.

'It is such a comical idea to imagine anybody's presuming to dictate or even advise any line of conduct to you.'

'Presuming—yes,' said Mr. Raynor. 'I should scarcely call the idea comical.'

'Well doing it at all, then.'

'“He that hath no pleasure in looking up is not fit to look down,”' said Mr. Raynor. 'You are making me out very unfit for my trust.'

'I recant then,' said Thornton, 'and am quite willing that you should be perfect after your own fashion. I am certainly afraid she will lose the pleasure of fault finding—but I suppose she can live without it.'

Her lips parted in a little smile as if about to speak, but they closed again silently.

'I am afraid my old simile of the lock of hair must stand Alie,' said Marion. 'But child you are tired, and in my judgment ought to go to bed.'

'My judgment does not say that.'

'And mine says must,' said Mr. Raynor.

She coloured a little, and Marion smiled, and Thornton said laughing,

'You see, Alie—he endorses my words. I am afraid your judgment will stand but a poor chance, after all.'

Even as he spoke, a little stir was heard in the kitchen ; and the opening door shewed them not indeed any part of the stir, but the cause of it,—Mrs. Raynor—a very twilight spot of grey silk against the glow of the kitchen firelight. With as little excitement and bustle as if it had been her

own parlour, so did the quakeress come in ; and was met at the third step by her son, his motions as quiet though rather more quick.

'Thee sees how much impatience human nature hath yet Henry,' she said. 'I could not wait to see thy wife till she was ready to come to me, therefore am I here.'

'And she will not be here until to-morrow,' he said, leading his mother to where Rosalie stood supporting herself by her arm-chair. 'The next best thing is visible.'

The heart of the quakeress had but imperfectly learned the quaker lesson ; for in silence she embraced Rosalie and softly replaced her in the great chair, and in silence held out her hands to Thornton and Marion, and gave them most cordial though mute greeting. Then her hand came back to Rosalie and rested caressingly upon her head, and once again Mrs. Raynor stooped down and kissed her.

'Mother,' said Mr. Raynor, 'you forget that Rosalie is not a quakeress.'

'Nay surely,' she said. 'Wherefore ?'

He answered only by a glance at the transparent hand on which Rosalie's cheek rested, its very attitude speaking some difficulty of self-control ; but his mother understood, and removed her hand and took the chair he had placed for her : answering then his questions and putting forth some of her own. Thornton and Marion meanwhile exchanged a few words but Rosalie said nothing.

'Why does thee not speak, love ?' said the quakeress presently. Mr. Raynor answered.

'We were talking a while ago upon your favourite theme of Silence mother. What were those lines you used to quote in its defence ?'

'It matters not, child,' she said,—'the lines were mayhap written by one who seldom held his peace save in a good cause.'

'Yet they were good, and you used to say them to me?'

'It may be I had done better not,' she said; 'therefore urge me not to say them again.'

'You will let him say them himself?' said Rosalie.

'If it liketh him—' said the quakeress. 'He thinketh not with me on all points.'

His hand laid on hers seemed to say those points were few and unimportant, as with a smile he said—

"Still born silence! thou that art
Flood-gate of the deeper heart!
Offspring of a heavenly kind!
Frost o' the mouth and thaw o' the mind!"

'Spring and winter are struggling for the mastery here to-night,' said Thornton. 'I wish the thaw would extend itself.'

'No,' Mr. Raynor said, 'not to Rosalie's lips. Do not set her talking to-night. Let her sleep—if to that she can be persuaded.'

"He hath a will—he hath a power to perform," said Rosalie with a little smile as she rose from her seat; nor did she look to see the smile that her words called forth, although it were more than her own.

It was a pretty morning's work that Mrs. Hopper's best room saw the next day, and a pretty company was there assembled. Only 'their four selves' again,—with just the set-off of the grey dress and clear cap of the quakeress, and the wonder and interest in every line of Hulda's little face,—with only the back-ground of country walls and hard country faces,—with no lights but the wood fire and the autumn sun. And the room had no ornament but themselves, unless the splendid red winterberries in Marion's hair. But it was rarely pretty and picturesque; and even the fact

that Rosalie must sit whenever she need not stand, rather heightened the effect. Mrs. Hopper said it was the prettiest sight *she* ever saw, and Tom Skiddy made only one reservation,—‘he wouldn’t say that he couldn’t see a prettier.’

It is a melancholy fact that the end of a voyage cannot be as picturesque as the beginning thereof,—whether it be a voyage in earnest, or merely the ‘wearie course’ above referred to. There is no momentary expectation of either storms or sea-sickness, and both are an old story. The waves do not gradually run higher and higher, but ‘contrarywise,’—there is very little *sea on*—if one may borrow a steam phrase, and the water becomes ingloriously tranquil. Unless indeed the fictional craft is to blow up with a grand explosion—and that in Sam Weller’s words, ‘is too excitin’ to be pleasant. In fact the voyage is over *before* the last chapter; and the only thing that one can do, is to pilot sundry important people over the bar, and through the straits, and land them all too safe, on the shores of this working-day world.

Not that as somebody says, ‘people begin to be stupid the moment they cease to be miserable’;—but still, when the course of true love, or of any other small stream, doth run smooth,—its little falls, and whirls, and foam, and voluntary beating against the rocks—its murmurs as a hard-used and thwarted individual—must of course be dispensed with. There is nothing for it, on either hand, but smooth water.

Mrs. Raynor sat alone in her library. Absolutely alone; for though the cat was enjoying himself on the rug, Mr. Penn was enjoying himself elsewhere; or it might be was attending to his duties on Long Island. Even the invariable knitting work was laid aside, and yet Mrs. Raynor busied herself with nothing else,—unless her own thoughts,

or the general appearance of the room—for so might be construed the looks that from time to time went forth on an exploring expedition. With never failing recollection she replenished the fire, even before such attention was needed; and once or twice even left her seat, and with arranging hands visited the curtains and the books upon the table. Then returning, she took a letter from her pocket and read the beloved words once more. It was all needless. The words—she knew them by heart already, and the room was ordered after the most scrupulous Quaker exactness.

The sharp edge of this was taken off by exquisite flowers, an eccentric little wood fire, and a bountifully spread tea table; where present dainties set off each other, and cinnamon and sugar looked suspicious of waffles. The silver glimmered with mimic fires, the plates and cups shone darkly in their deep paint and gilding; the tall sperm candles were borne aloft, but as yet unlighted. Even the sad-coloured curtains hung in softened folds in the soft fireshine, their twilight tints in pretty contrast with the warm glow upon the ceiling. As for the flowers, they hung their heads, and looked up, and laid their soft cheeks together, after a most coquettish fashion—as if they were whispering; and the breath of their whispers filled the room. A fair, half-revealing light found its way through the bookcase doors, and rested upon the old books in their covers of a substantial antiquity, and touched up the lighter adornments of such novelties as the Quakeress or her son approved. The clock in its dark frame of carved wood went tick, tick, with the most absolute regularity, and told whoever was curious on that point that it was six o'clock.

Then Rachel appeared.

'Will thee have the candles lighted?'

'I thank thee, Rachel, not yet.'

'Does thee intend to wait tea even till they come?'

‘Surely,’ said Mrs. Raynor. ‘But ye had better take tea down stairs, if so be ye are in haste.’

‘Nay,’ replied Rachel. ‘Nevertheless, it may well chance that my waffles shall be for breakfast.’ And Rachel closed the door noiselessly and retired.

But while Mrs. Raynor turned her head the door was opened again as noiselessly; and when she once more looked round from a contemplation of the clock face, the very persons whom she had expected stood in the doorway. Rosalie in her flush of restored health and one or two other things, her furred and deep-coloured travelling dress, looking as little as possible like a quakeress; and Mr. Raynor, though bearing out his mother’s words that he would have made a beautiful Friend, yet with an air and manner that said if he were one now it was after a different pattern.

‘I wellnigh thought the south meant to keep thee!’ the Quakeress said as she embraced him.

‘Nay mother,’ he answered smiling, ‘it was somewhat from the north that kept me. And you see how my rose has bloomed the while.’

‘Fairer than ever! and better loved.’

‘Than I deserve to be ——’ Rosalie said.

‘Thee need not speak truth after thine own fashion here,’ said the Quakeress with a smile, and laying first her hand and then her lips upon the fair brow that was a little bent down before her. ‘Doesn’t thee know that the right of possession is enhancing?’

And Rosalie had nothing to do but sit where they placed her, and let her hands be ungloved and taken care of; while questions and words of joy and welcome could not cease their flow, nor eyes be satisfied with seeing.

Then came tea; but Rosalie drew back from being put at the head of the table.

‘That is Mrs. Raynor’s place,’ she said.

‘So I think.’

‘What does thee call thyself?’ said the Quakeress with a quiet smile. ‘That is thy name now, dear child, and that is thy place.’

And Rosalie was seated there without more ado; where even Rachel surveyed her with unwonted admiration of colours and uncovered hair.

‘Mother,’ said Mr. Raynor, as it drew on towards eight o’clock, ‘you must let me take Rosalie away for an hour. I know she will not rest till she has seen Thornton and Hulda.’

‘This night?’ said the Quakeress. ‘Thee will weary her.’

‘That is just what I am trying to prevent.’

‘Thee must judge for thyself, Henry,—nathless thee knows that we Friends think much of patience.’

‘She is patient enough,’ said Mr. Raynor laughing, and laying both hands on his wife’s head as he stood by her chair. ‘So patient that she requires very particular looking after.’ And when the carriage came he took her away as he had said.

What a happy surprise there was! what a joyful hour of talk! How pleasant it was to see the old house again, restored from its fiery damage and with such owners. So much joy, that one is tempted to wonder why nobody ever wrote upon the Pleasures of fulfilment. And if her old sorrowful life came up to Rosalie, it was but to stir the very depths of her heart with wonder and gratitude; till she was ready to say with the Psalmist, “*What is man, that thou art mindful of him? or the son of man, that thou visitest him?*”

An hour had passed, and half of the next one, and still they lingered; until a slight stir arose in the street, and cries and shouts—first distant and then drawing near—broke the stillness. Cries not of fear, as it seemed, neither

of disturbance, but of joy—of excitement—of wild congratulation. In a moment the little party were at the door.

All was still, breathless. Then again the murmur came swelling towards them, and foremost among the cries broke forth 'Peace! Peace!' Nearer and nearer the people took it up and cried, 'Peace! the Peace!' From one and another—from deep strong voices and from throats that could hardly raise the cry, it was heard—'The Peace! the Peace!'

'Peace! Peace!' cried out one little boy whose pattering footsteps bore him swiftly past the house. 'Peace! Peace!—I wish my voice was bigger!'

'I wish my heart was,' Mr. Raynor said. And as they rode home lights sprang forth in every window, the city shone as if with daylight; and ever went up that cry, 'Peace! Peace!'

[We regret that our narrow limits have compelled us to do imperfect justice to a story which has interested many readers. But those who wish to peruse it entire, can now obtain "My Brother's Keeper" in a separate publication, containing all the omitted passages. Ed.]

THE NUN'S CONFESSION.

THE painted panes let through the smile
Of the descending sun ;
In jewelled light it crept along
The carvings quaint and fun,
And poured its benediction bright
Upon the kneeling nun.

'Twas spring in all the world without,—
And every heart was gay,
And opened, like the opening flowers,
Beneath the warmth of May :
Strange thrills of joy stole unawares
Into the cloisters grey.

And now 'tis evening, and within
The convent-chapel fair,
Beside the carved confessional
Behold her kneeling there,
With earnest, upturned countenance,
And sad, perplexed air.

At first in listless attitude,
As one condemned to hear
Some silly oft-repeated tale,
The priest bent down his ear ;—
But soon his startled heart awoke,
His absent thoughts drew near.

THE CONFESSION.

My Father ! I have wandered far,
And lost the clue of truth.
Oh, take my hand and lead me back,—
Have pity on my youth.

Last evening, in the quiet pause
Betwixt the night and day,
I pondered, self-involved in thought
Upon this month of May :
The shadow of the lilac-trees
Fell on me where I lay.

Like a large lens that drinks the sun,
The inward sense of sight,
Drew down into my thirsty soul
A flood of vernal light ;—
My soul in dreamy rapture drank
The river of delight.

I saw no more the gloomy walls
That shut the garden in,
No more came pouring over them
The city's endless din ;
But gentle memories and desires
Painted the far unseen.

Mountains, receding one by one,
Filled up the distance dim ;
Such as the painter drew beyond
The sleeping form of him,
Who 'neath the opening gates of Heaven
Rested the weary limb.*

* Rembrandt's Vision of Jacob.

Mysterious with a slumbrous haze
They slept within the sky ;
While deepening into dark and bright,
Distinct in drawing nigh,
Green slopes, bright pools, and shadowed rocks,
Closed round my gazing eye.

And into like perspective passed
The motion and the sound ;
The far cascade, silent as snow,
Fell to the vale profound ;
While at my feet a thread-like rill
Sang through the mossy ground.

The quiet smile shone slowly out
That in the distance lay ;
Till over-head and all around
Laughed merry-hearted May,
And streams and birds and rustling boughs
Kept the year's holyday.

And oh! the unutterable love
That gushed within my heart !
All thoughts of beauty, all delights,
Of nature and of art,—
All best and dearest things on earth
Had in that dream a part.

And still the closing sense shut out
All weariness and pain,
And all my anxious future died,
—That loss indeed was gain.
On boundless life and love I launched
As on a shoreless main.

Alas ! I know my sinful soul
Was wandering far astray ;
Yet all the while it seemed as if
An angel led the way,
And showed me God's own glorious world
Which I had cast away.

And, O my Father, must I still
Drag out what yet remains ?
Discovering to thy holy eyes
My heart's most blushing stains—
Does God break through that pure reserve
Which He Himself ordains ?

'Tis as I thought—when on my brow
These heavy folds were bound ;—
While my poor shining curls, shorn off,
Lay dead upon the ground :—
The veil God gave is better far
Than that which man has found.

My soul grows dark ; for every right
Seems lost in double wrong.
Bear with me yet, for maddening doubts
Make my confession long,
As vexing discords dash aside
The current of a song.

Alas, thou sighest for my sin !
All else I well might bear,
But not to bow in shame for me
My Father's hoary hair.
My lamp of peace is out. Alas !
Hast *thou* no oil to spare ?

Thus, sitting 'neath the fragrant tent,
The blooming lilacs made,
Through half-closed lids my spirit drew
The sunshine and the shade,
And on their Heaven-broad wings escaped
To where my childhood played.

In heaviest sleep our conscious souls
Still watching near us seem,
And some slight household noise may make
The crisis of a dream.
Soon on my waking reverie
Broke in a swallow's scream.

It told of nests that underneath
The old grey corbels hung,
Of glancing wings,—now outward bound,
Now homeward to the young,—
And all the pleasant cares of which
That endless twittering sung.

I speak of what I knew by heart,
I did not see it then,
That single, sudden cry alone
Broke through into my brain,
And my enchanted dreamland woke
And answered back again.

The languid, odorous air stole round
In whispers strangely clear,
That seemed to breathe the same bright hopes
That blessed the maiden-year,
And promise to my wondering heart
That something sweet was near.

Filled with expectant ecstasy,
My heart began to swell ;—
When—slowly—from the chapel-tower
Chimed down the vesper bell,
And from the sun-lit heights of hope
To black despair I fell.

While others as an angel's voice
Caught up the welcome sound
That hushed their cares asleep, and brought
The day's best blessings round,—
I heard it as the flying slave
The bay of tracking hound.

The straightest ray of Heaven-born light
Bent in the sea appears ;
So purest thoughts are turned to sin
In these dense atmospheres ;
And gold transmutes to brass by this
Strange alchemy of tears.

O Nature ! art thou then so false,
Or am I false to thee ?
Alas ! the hollow husk of Life
Is all that's left for me,
And gnawing worms coil round within,
Where the sweet nut should be.

F. A. P.

TIMES OF REFRESHING.

CHAPTER IV.

FOR nearly 1400 years the true Church had been hidden. The tall weeds that overran the fields had been mistaken for the flowers, till the nomenclature of ecclesiastical botany had become thoroughly perplexed. Fathers were called Saints, and the lives of these saints were given as the history of the Church, while God's real saints were silenced and slandered, and the scattered fragments of Christ's true Church treated as so many sections of heresy.

God allowed it to be so, for the day of the manifestation of the Sons of God is not yet come. It doth not yet appear what they shall be. This is man's day; God's day is coming. There shall be no veiling then; no reviling of the saints of the Most High; no mistake as to what is, or what is not, the Church of God on earth.

Still it seemed as if God, even on this side the great day of revelation, was to take His Church's cause into His hands and provide for her vindication before the eyes of men. Hitherto the adversary had found it easy to close the lips of God's witnesses and to blacken their name. He had power and patronage at his disposal, and he could smother truth, as well as brand with some odious name the protesters against anti-Christian error.

But now God puts into man's hand an instrument which makes this wholesale calumny almost impossible. The printing-press is set up, and through means of it God takes His truth and His witnesses more out of man's power. Hitherto it was easy to silence a voice and to burn a manuscript. But now the voice can prolong itself in articulate echoes beyond man's power to muffle. It can perpetuate itself to such an extent and at such a rate as to mock the malice of the enemy. The manuscript can be multiplied a

thousand-fold, in spite of the efforts of a Jerome or a Gregory to mutilate or tear or burn it.

Thus God, without an open miracle, makes preparation for a more abiding and truthful condition of things, in which the enemies of the truth and of the Church were no longer to have the whole field to themselves. Having made this preparation for defeating the adversary's ancient malice and cunning, He raises up His witnesses and puts His truth into their lips. Satan resorts to his old devices, but in vain. He persecutes Wicliff and slanders his memory. But scarcely are his ashes seen floating down the Swift than the press has caught up his name and his testimony. He may be condemned, but he cannot be condemned unheard. Again he kindles the flames on Huss; but in vain. The martyr's testimony is not so quickly stifled. It lives; and the name of the martyr takes wings and flies abroad. The embers of the martyr-fires were flung abroad over Europe. Ten thousand feet were set in motion to tread out every spark. But in vain. It was impossible. Nay, more; a mighty wind went over the kingdoms of the West, and the embers kindled up into flames that startled nations and terrified the enemies of the Gospel.

And now God set His instruments to work in a new and more thorough way. It was no mere fragment of doctrine, nor was it merely one truth, that was to be brought to light. The foundations were to be searched out, down to their very lowest stone. Never had the like been done before since the days of the Apostles. Never had room and time been afforded for God's witnesses to do their whole work as now. The enemy might gnash his teeth; but the work went on. He might cast a hundred witnesses into the flames; still the work went on. His power to slay the man was not yet taken from him; but his power to blacken a name or to calumniate truth,—to call evil good and good evil, was

greatly narrowed and shorn. Truth seemed to have had a new buoyancy conferred on it, and it refused to sink. Half the efforts now put forth had in a former age availed to submerge it utterly. Now it rises under every weight and pressure. *Mersus profundo pulchrior evenit.*

The shower, as it fell, was now received into vessels from which it did not so easily or speedily evaporate. Refreshings lasted longer and spread more widely. It was the same Spirit and the same Gospel as of old, but they were now to go forth in a new way and under new conditions. In these conditions there was, no doubt, evil as well as good; but still there was this peculiarity, that the truth of God was henceforth placed more out of the reach of man's enmity and slander.

The Reformation was a crisis, not a commencement of a new state of things. Before Luther there had been noble witnesses for Christ, and in almost every country throughout Europe there had been, what we may call, a pre-Reformation shower.

In the "Mirror of the Martyrs" (1631) we read:—"Certes, the fervent zeale of these Christian daies seemed much superior to these our daies and times, as manifestly may appear by their sitting up all night in reading and hearing of the word; also by their expenses and charges in buying bookes of English. Of whom some gave five markes, some more, some lesse for a booke. Some gave a load of hay for a few chapters of Saint James, or for somewhat of S. Paul's Epistles in English; in which rarity of good bookes and want of teachers, this one thing is greatly to be marvelled at, namely, that the word of truth notwithstanding did multiply so exceedingly as it did amongst them. For so (saith Master Fox) I observe in reading the registers, how one neighbour resorting to and conferring with another, eft-soones a few wordes of the first or second talke did winne

and turn their mindes to that whereto they desired to persuade them, touching the truth of God's word and His sacraments. To see their travel, their earnest seeking, their burning zeales, their readings, their watchings, their sweete assemblies, their love and concord, their godly living, their faithful meaning, may make us in these our daies blush for shame. The name by which they were knowne, one to another, was the *just-fast men*. Among these was one Thomas Man, martyr, commonly called Doctor Man, who confessed *he had turned seven hundred people* to his religion and doctrine, for which he thanked God." (P. 115, 116.)

In 1424, William White suffered martyrdom at Norwich. Of him we read that he was not after the common sort of priests, but reputed among the number of those of whom the wise man speaketh, "he was as the morning-star in the midst of a cloud. He was a well-learned, upright, and well-spoken priest. He gave up even his priesthood and benefice, and took him a godly young woman to his wife. Notwithstanding, he did not therefore cease from his former office and duty, but continually laboured for the glory and praise of the spouse of Christ, by reading, writing, preaching. The principal points of his doctrine were these, that men should seek for the forgiveness of their sins only at the hands of God. . . . Going into Norfolk with his wife, and there occupying himself busily in teaching and converting the people to the true doctrine of Christ, he was apprehended and burned."

In 1470 died Regiomontanus, "one of great knowledge in the original languages, and who had such love to the Scripture, that he wrote the whole New Testament in Greek with his own hand."

In 1489 died Wesselus of Groningen, whose last words were, "Blessed be the Lord that all my doubtings and false reasonings are gone; I know nothing now but Christ and Him crucified."

About the same time Arnoldi used to breathe this as the burden of his daily supplications, "O my Lord Jesus Christ, I believe that Thou alone art my redemption and my righteousness." And Christopher of Utterheim gave forth this as his dying testimony, "My hope is the cross of Christ; I seek for grace, not for works."

Very many of such souls were found in the age immediately preceding the Reformation. The number of pre-Reformation martyrs is far greater than most are aware of. Indeed, it may be said, that from the days of Huss the fire was never allowed to go out. In almost every country of Europe it was kept burning. Witness after witness was led to the stake. Rome boasted that she had extinguished heresy. Seldom has a boast been found more utterly false; before Huss there might be some appearance of this. But the period between Huss and Luther yielded quite a harvest of witnesses. So very widely did the shower fall, so long did it continue watering the thirsty ground.

Thus speaks an old writer, referring to the whole Reformation era, during which the long and gradual flow of blessing reached its height. "This high springtide of the power and efficacy of the word was after so sad and visible a restraint for many ages; and what of the work of the Spirit was then known was like a private seal on the hearts of the godly, in those times of sackcloth in the wilderness: but after this blessed day (the Reformation) once began to dawn, the Lord did so visibly rend the heavens, and caused the mountains to flow down at His presence, with so solemn a down-pouring of the Spirit following the Gospel, as there could be no standing before it, but cities and nations were subjected to so marvellous a power to the embracing of the truth. This great work of God was not for a short time, but for many years. Wherever the truth came, it did most discernibly accompany the same, not only to affect and convince, by some transient

flash upon the spirits of men, but to that solid and effectual change which visibly transformed them into that blessed image of Christ, by the spirit of holiness, so as it was given, both to believe and also to suffer for His name."

No laboured language nor artistic picture could better set forth the real condition of Europe, both before and at the Reformation, than the above quaint and simple sentences. He who wrote them knew what the Reformation was, and by whose power it was accomplished. It was nothing less than a second Pentecost. Beyond all preceding ages since the days of the Apostles, it was a time of refreshing.

God then led men back to the simple cross of Christ, which for centuries had been obscured. He brought to light Apostolic truth in wondrous clearness and power. He caused the rubbish to be dug away from the foundations of the Gospel that they might be laid bare. The testimony of the Reformation was for *Christ alone*,—for Him who died and rose again, and who, having sprinkled His blood upon the mercy-seat, invites men to draw near to God in the full assurance of faith.

The contest with Rome was specially round the Cross of Christ. The great question of the day was, "How is man to be justified before God?" Well and nobly did the Reformers answer that mighty question, leaving no room for mistake in their testimony as to the ground on which God invites the sinner to draw near: they said, "Christ has done everything,—take His doings, and come to God with them as your claim; use His righteousness as if it were your own,—use His sufferings as if they were your own."

God owned the testimony thus given to His free love manifested in the gift of His Son. The Spirit of God moved upon the face of the waters. It was a glorious day for Europe.

H. B.

GAZELLE, THE ROE OF SCRIPTURE.

(*Gazella Dorcas*.)

" The wild Gazelle on Judah's hills
Exulting yet may bound,
And drink from all the living rills
That gush on holy ground ;
Its airy step and glorious eye
May glance in tameless transport by."

Of all the antelopes the Gazelle is the most celebrated and the most delicate. The slenderness and neatness of its body and limbs, its speed, the grace of its motions, and the large black open eye, have been regarded by the poets and the people of the countries where it occurs as so many emblems of grace and alacrity.

In imitation of its large black eyes, the Eastern females anoint their eyelashes with a preparation of antimony called *Kohl*; and speaking of the eyes of an Eastern beauty, the poet exclaims,

" Go look on those of the gazelle."

Dr. Shaw* thinks that the disciple at Joppa, "whose name was [Tabitha, which is by interpretation Dorcas]" (Acts, ix. 36), who was raised to life by Peter, might be so called from this particular feature and circumstance: Dorcas being the Greek name for the gazelle, as Tzebi or Tabitha is the Hebrew or Syriac.

It is the animal alluded to in the Scriptures under the names of "Roe" and "Roebuck."

* "Travels and Observations," p. 414.



The Gazelle. (Antelope Dorcas.)

Hemprich and Ehrenberg met with this species sometimes in herds, and sometimes in single individuals. Whenever they catch sight of an intruder the whole herd scamper away, but soon stop, the males first and then the fawns; as the huntsman approaches, the male remains for a considerable time quite still, with his neck erect, and as the enemy gets nearer he stamps the ground with his forefoot, and makes a loudish noise; on this the whole herd disappear with great speed, nor do they again halt till they consider themselves out of danger.*

Wells and other places are sometimes in the East called after the gazelle. Burckhardt† during his travels came to an *Ain Toby*, or "the spring of the Gazelle:" it is to the east of the plain of the Haouran, and gracefully expresses, like our own Hart-leap Well, some incident in which gazelles bore a conspicuous part. Messrs. Bonar and M'Cheyne, in their delightful narrative, relate, that shortly after leaving the Sea of Galilee, on the 16th July, 1839, they came to the plain of Huttin, which was then carpeted with wild flowers and dotted with patches of cultivation:—"Here we saw the gazelle bounding on before us, over shrubs and rocks and every obstacle, and felt the exquisite fulness of meaning in the Church's exclamation, 'Behold, he cometh leaping upon the mountains, skipping upon the hills! My beloved is like a gazelle or a young hart' (Song, ii. 8, 9). It is the very nature of this lively animal to bound over the roughest heights with the greatest ease; it seems even to delight in doing so."‡

Messrs. Irby and Mangles§ were often pleased to fall in with small groups of the gazelle, which proved much less

* Ehrenberg, "Symbolæ Physicæ."

† "Travels in Syria," p. 119.

‡ "Mission of Inquiry to the Jews," p. 296.

§ "Travels in Egypt, Nubia, Syria," &c. p. 7.

timid than they expected, the elegant creatures stopping to gaze on them as they passed, with their ears raised. Their light-brown colour is not unlike that of the sand, and must often conceal them from the view of their enemies; these travellers remarked, that when they were in a valley it was difficult to perceive them. Lynch, in his "Narrative of the Exploration of the Dead Sea," was struck with the stone colour of most of the animals of the Desert, which so closely resembled the hue of the mountains and plains, that there must be in this circumstance another evidence of design.

The traveller Burckhardt fell in with several places on the eastern frontiers of Syria set apart for the hunting of this animal. The inhabitants select an open space in the plain, of about a mile and a half square; they enclose this on three sides with a wall of loose stones, too high for the gazelles to leap over. Gaps are purposely left in different parts of this wall, and near each gap they sink a deep ditch on the outside. Care is taken to select a spot near some rivulet or spring to which the gazelles resort in summer. The peasants assemble and watch till they see a herd of these creatures advancing towards the enclosure, into which at last they are driven. The gazelles, frightened by the shouts and fire-arms of these people, try to leap over the wall, but as they can only effect this at the gaps, they fall into the ditch outside, where they are easily taken. The chief of the herd always leaps first, the others follow him one by one. When taken, the gazelles are immediately killed and their flesh is sold. There is every likelihood that it was this animal which Esau pursued in "the field" with his "quiver and bow," agreeably to the instructions of Isaac, who desired the venison as "savoury meat" (Gen. xxvii. 3, 4). Some European travellers, such as Bruce, do not speak highly of its flesh as food; but others, such as Laborde, and Irby and Mangles, think it well flavoured. The Arabs regard it as a

great dainty ; and we find that in the " provision for one day " served up at Solomon's table, a place is assigned to the gazelle (1 Kings, iv. 23). The flesh has a sweet, musky flavour, which is highly agreeable to the palate of those accustomed to it.

The gazelle is a favourite object of pursuit to the Eastern sportsman. The Arabs watch for it with their dogs at pools where it has been drinking, as it can be easily captured in hot weather, immediately after it has drunk water. Those, however, who are fond of sport, do not snare the gentle creature in this treacherous way, but pursue it with hawk and hound. Dr. Layard,* who has often witnessed this sport over the boundless plains of Assyria and Babylonia, describes it as "most exhilarating and graceful, . . . displaying equally the noble qualities of the horse, the dog, and the bird." This eminent traveller tells us that the falcon and greyhound, employed in the pursuit of the gazelle, must be trained to hunt together by a process which is, however, unfortunately very cruel. The falcon is taught to eat its daily meal, which consists of raw meat, fastened to the stuffed head of a gazelle. The next step in its "education" is to accustom it to look for its food between the horns of a tame gazelle. In the course of its tuition the distance between the animal and the falconer is gradually increased, until the falcon has been taught to look for its meat when about half a mile off. A greyhound is now let loose at the gazelle, the falcon being flown at the same time : as soon as the poor victim has been seized its throat is cut, and a portion of the flesh is at once given to the hawk. By the time that three gazelles have been thus treated, the falcon and greyhound are considered able to act in concert. It requires some art in the trainer to teach his two pupils to single out the same gazelle, and, when that point has been gained, to keep the

* "Nineveh and Babylon," p. 482.

dog from injuring the bird, when struggling with its quarry. The greyhound soon learns to watch the movements of its comrade and to act in concert. In this way five or six gazelles may be taken in the course of a morning. Dr. Layard remarks, that "the falcon, when loosed from its tresses, flies steadily and near the ground towards the retreating gazelles, and marking one, soon separates it from the herd. It then darts at the head of the affrighted animal, throws it to the ground, or only checks it in its rapid course. The greyhound rarely comes up before the blow has been more than once repeated. The falconer then hastens to secure the quarry. Should the dog not succeed in capturing the gazelle after it has been struck for the third or fourth time, the hawk will generally sulk and refuse to hunt any longer. I once saw a very powerful falcon, belonging to Abde Pasha, hold a gazelle until the horsemen succeeded in spearing the animal. The fleetness of the gazelle is so great, that, without the aid of the hawk, very few dogs can overtake it, unless the ground be heavy after rain."

In the Bible the great speed of this animal is more than once alluded to. Asahel, a favourite attendant of David, is described as being "as light of foot as a wild roe" (2 Sam. ii. 18); and among "the men of might" who took part with David, when retreating before Saul, the Gadites are specified, "whose faces were like the faces of lions, and were as swift as the roes upon the mountains" (1 Chron. xii. 8).

In addition to its use as food, we may mention that the natives of Syria make a kind of parchment from the skin of the gazelle. With this they cover the small drums used as an accompaniment to their simple musical instruments. Its horns supply the place of nails or pegs, and a young gazelle is not unfrequently caught and tamed, and when reared by hand, becomes a pet of the children of the wandering Bedouin.

A. W..

LIFE, IN ITS INTERMEDIATE FORMS.

No. II. (*continued*).

INSECTA.

THIS Class of minute animals is so immense, that it would be impossible within our limits to give a hundredth part of what is on record concerning them, even if we omitted all technical details, and confined ourselves to that which is popularly interesting. The study of the whole Class is felt to be far too large for one human life to embrace with any degree of completeness, and hence we hear of men eminent as coleopterists, lepidopterists, hymenopterists, &c., from their having devoted themselves to some one or other of the subordinate groups of this vast assemblage. We shall here just give a bird's-eye view of these subdivisions, indicating here and there some of the more prominent points of interest for which each is distinguished.

Chief among them stands by universal consent the order of Beetles, principally because they are the most "perfect" of Insects. By this term "perfect" as applied to structure, which has sometimes stumbled uninitiated students, we do not, however, mean to imply that a House-fly or a Bug is not as perfectly adapted for its mode of life as a Beetle, nor that it is in the least degree less worthy of an Omnipotent Creator. The word is used by naturalists *in a technical sense*, to express the degree in which we find those peculiarities developed that constitute any particular group. Those peculiarities of structure, for example, that make an Insect *what it is*, and not a Worm or a Crustacean, are found to be pre-

sent in the greatest intensity, and in the fullest combination, in the group of Beetles, and hence we say that these are the most "perfect" of their class. A Beetle is not more perfect *as an animal* than any other, but it is a more perfect *insect*, or rather, *more perfectly an insect*.

You may very readily identify a Beetle by its mouth being armed with two pairs of forceps-like jaws, and by its fore-wings being hardened into leathery sheaths for the hinder wings, and meeting in a straight line down the centre. The technical name COLEOPTERA, or *Sheath-wings*, expresses the latter character in Greek.

Many species of this group are pre-eminent for beauty of colour, especially the many-coloured refulgence of burnished metal, as in the *Buprestidæ*, and the *Cetoniadæ*, and the *Eumolpidæ*, and others; and the lustre of the richest precious stones, as in many of the Diamond-beetles and others of the *Curculionidæ*, whose wing-sheaths under a lens look as if they were dusted with pounded gems.

The Glow-worm, that lights our hedge-banks with its feeble spark in the soft summer nights of July, is a Beetle, and so is the Firefly of the West Indies, that carries a pair of flaming lamps upon his back. The pretty scarlet Lady-bird, that appears to have had a "favourable eruption" of black buttons, is a little Beetle that every child knows and loves; and the dreadful Death-watch, that scratched the doom of our great-grandmothers on their bed-posts, is one still smaller. Very few of this great group render the slightest direct service to mankind; we do not at this moment recollect any but the *Cantharis*, or Blister-fly, which is useful in surgery.

Those Insects which have the fore-wings somewhat leathery, but less rigid than those of Beetles, and sheathing the lower pair in such a way that their edges overlap each other, are called ORTHOPTERA, or *Straight-wings*. The

Locust, Grasshopper, and Cricket, all of which make a crinkling sort of music by rubbing their stiff wings in various ways over each other, are of this sort: and so is the Earwig, that spoils our dahlias by eating holes in their tender petals, and the ferocious Mantis of the tropics, that holds up its sawlike arms as if in the attitude of prayer (hence called *Prie-Dieu*), but really watching to smite down any unwary fly that may be passing, and to seize it between the locking spines of its fore-arms.

Who that has sauntered by a river's side in the burning noon of summer is not familiar with the arrowy Dragonfly? He swoops down in wide curves, and just touches the water in his rushing flight, and turns, and darts to and fro, with a speed and a power that seem to mock the ring-net of the eager insect-hunter. The sun's ray gleams from the ample pinions as they speed past our eyes, as from surfaces of polished steel, and the long and slender body that is poised behind is clad in mail of green and azure and gold. Ha! we have struck down the bold warrior with our cane, and there it lies, spinning round in the grass, and rustling its beautiful wings, with tremulous vibrations, in its fruitless attempts to fly. Poor creature, thou wilt fly no more! no more will the vigorous impulses of those filmy pinions bear thee aloft on the thin air, and carry thee in impetuous evolutions after thy tiny prey! But what elegant organs these wings, now still in death, are! they are like plates of talc of extreme thinness, through which expands a network of nerve-ribs, a lace that no collar on fair lady's neck ever equalled; every component thread of which is a tube communicating with the air-pipes or lungs of the body! How appropriate is the term *NEUROPTERA*, or *Nerve-wings*, for such Insects as these!

And now we come to the "industrial" classes, to use an expressive term of modern coinage. The Butterflies are fine ladies that go a-shopping among the flowers, the Beetles

are the starred and jewelled nobility, the Dragonflies are warriors, true knights-errant furnished with the pomp and circumstance of war ; but the humble, useful, ever-busy Bee is an artisan, a representative of that class who are "*fruges producere nati*;" and not less industrious and skilful (though far from so serviceable to us) are its cousins, the Wasp and the Ant. The architectural instincts of all these Insects, but especially those of the Hive-bee, are exceedingly curious, but we have not space here to enter into details.

This order is termed HYMENOPTERA, or *Membrane-wings* ; but the technical distinction between these and those which we have just dismissed is that these possess, at least in one sex, a horny tube at the extremity of the body, which is sometimes connected with a poison-bag, and is called a sting, and at others is simply an instrument for the piercing of animal or vegetable substances, in order to deposit eggs in them. But a much more obvious difference is found in the character of the wings, which are so shaped that the hind pair seem as if cut out of the fore pair, with which they interlock by means of small hooks during flight, so that both might readily be mistaken for a single pair. The nervures are commonly stouter, and form a wider network, and the membrane is generally less delicate than in the preceding Order.

All the forms of Insects which we have been enumerating agree in one point, viz., that their mouth is furnished with biting jaws ; those that follow, on the other hand, have the same organs, but so modified in development and altered in function, as to constitute a sucking, pumping, or piercing apparatus. The elegant LEPIDOPTERA, or *Scale-wings*, including the Butterflies, which are active by day, the sonorous-winged Hawkmoths, that probe tubular flowers in the twilight, and the Moths, which swarm in the early hours of night, constitute the next order. Their chief peculiarities

have been already mentioned, and we shall therefore merely mention the Silkworm, the caterpillar of an Oriental moth, now naturalised throughout the civilised world, as another example of an Insect to which man is largely indebted.

An extensive group is called HEMIPTERA, or *Half-wings*, because the majority of them have the fore-wings curiously varied in texture, the basal portions being of a stiff leathery consistence, while the terminal part, separated from the former by an abrupt line, is thin and membranous. The vast tribe of Bugs comes here, all of them repulsive and disgusting from their rank pungent odour, but in many cases adorned with rich colours, and often bearing the most bizarre forms. Here, too, are usually placed, though distinguished by some entomologists, the insects which produce the lac of India, and the splendid dye called "cochineal" of tropical America. The sole possession of the latter insect was an object of jealous care with the government of the Spanish colonies, and so highly was it valued by other nations, that our own East India Company offered a reward of 6000*l.* sterling to any one who should be so fortunate as to introduce it into their dominions. That object has been effected, and cochineal is now cultivated in many countries.

Finally (for we need not stop to describe the few parasitic, darkness-loving, uncomely insects that belong to the wingless orders), we have the order of DIPTERA, or *Two-wings*, including the Gnats, the House and Flesh-flies, whose chief distinction is indicated in their name. This is a populous group, and many of its members display habits and instincts which are highly entertaining ; perhaps none more so than those of the common Gnat, from the construction of its tiny boat of eggs, to its emergence from the water, empowered to suck our blood in its merciless practice of phlebotomy.

P. H. G.

A WEEK IN WURTEMBERG.

GERMANY is noted for its books, the annual publication of which has been estimated to equal in number that of France and England united. Leipzig, as is well known, is the great book-mart, the place where, at the periodical fairs, books are exchanged and thence become diffused through every province of Germany. But whilst Leipzig is the centre of circulation, Stuttgart enjoys a pre-eminence also, as one of the chief sources of production. The printing establishment of the Baron Cotta, which is so noted for the beauty as well as the number of its issues, we made the object of a special visit. Cotta's press is not open for the printing of books in general, but is exclusively employed for the works published by his own house. Yet, such is the magnitude of the trade which the enterprise of this one house has gathered around it, that we are induced to insert some of the statistics of its productions, with which its manager has kindly furnished us. The average daily printing is 110,000 sheets, or 220,000 impressions. This gives a yearly issue of upwards of 33,000,000 sheets, or 66,000,000 impressions. By extra work, extending the labour to 11 hours, as many as 300,000 impressions are frequently produced in a day. There are at all times many illustrated works on hand, which require the greatest care and nicety of execution. This renders the above returns smaller than they would otherwise be. The series of the "German Classics" bearing the name of the Cotta press, which is so well known by every German reader, is sufficient in itself to give employment to an immense establishment. The series extends to 570 sheets, and with a yearly issue of 40,000 copies, necessitates the printing of 22,800,000 sheets, or 45,600,000 impressions.

annually. The establishment employs necessarily a large number of printing-machines: 1 four-feeder, 2 two-feeders, 7 double-cylinder machines, and 7 single, with 35 hand-presses, comprise the working stock; 2000 cwt. of moveable type and 1500 cwt. of stereotype are, we are informed, in use. There is a second establishment at Augsburg, at which the celebrated "*Allgemeine Zeitung*" is printed. A type-foundry, and all the requisites for the purposes of stereotyping and of engraving, are attached to the establishment. The number of hands in constant employment is 350.

We have already, in a former paper, given an account of the Mission Conference. On the following day we attended the *Pastoral Conference*. There were present upwards of 150 pastors,—the best men in the Church of Würtemberg, with some few from the circumjacent provinces of Southern Germany. They sat, under the presidency of the venerable poet and pastor, Knapp, for four hours; the first half of the time being devoted to addresses, or rather conversational remarks, upon one or two questions of doctrine, suggested by the passages of Scripture read at the commencement, and the remainder of the meeting being engaged in the discussion of matters connected with the position of the Church and the progress of evangelic truth in Würtemberg.

Of such conferences as the above, two are held yearly in Stuttgart; and they are unquestionably the means of doing much, by bringing into personal intercourse those who are engaged in the same great work throughout the country, inciting them to enlarged usefulness and greater zeal, and enabling them at the same time to take counsel together as to the adoption of those measures for the furtherance of the Gospel, which can only be carried into execution by concerted action. Such conferences are numerous also in other parts of Germany, and have carried on their beneficial operation for a considerable period. To them in great measure

is due the rise of the Kirchentag, or great Diet of the Churches, which since the year 1848 has occupied the same position towards Germany generally, as a convention of their collective churches, which the Pastoral Conferences have occupied in relation to the individual countries or provinces in which they have existed.

The Prelate von Kapff, to whom we have referred, is one of the chief ornaments, not of Würtemberg alone, but of the Church of Germany. We met him at Frankfort, where he took a very prominent part in the Kirchentag, and again had the opportunity of seeing him in his own home at Stuttgart. His name is associated with much of what has been done in that city in recent years, to supply the spiritual wants of the population. The appointments in the church being all made by a state power which has scarcely any disciplinary authority, and in the Consistory of which Government officials and even the Roman Catholic ecclesiastical dignities have a voice, it may be conceived that the preservation of true piety in Würtemberg has been due to something else than the care of church authorities. It has, indeed, for centuries been in the largest degree indebted to the existence of the "Pietist Meetings,"—meetings, that is, for the reading of the Scriptures and prayer, which have been held in private houses, amongst old and young, male and female, rich and poor, throughout the country, and through the instrumentality of which, whilst the men of intellect at Tübingen were entangled in the sophistries of a Rationalist philosophy, the light of the truth was sustained in the land and reflected back to the University, and a stream of holy influence perpetuated which has spread fertility and beauty throughout its course. These still continue very generally through the country; but to supply the wants of the Church in Stuttgart, for example, where other means are needed, a system of *eldership* has been established,

which has been productive of much beneficial result. The larger churches have fifteen; the less important, a smaller number of these elders. Each elder has a deacon, who acts as his assistant. The city is divided into districts, and it is the duty of the elder, with his deacon, to visit from house to house, and especially to care for the sick and the poor, and to distribute the necessary assistance. A committee of the elders and the clergy forms the "Poor Commission," who co-operate in the distribution of the public alms. A smaller committee meets weekly to determine the relief which the so-called "Begging-Abolition Society" affords. This Society consists of 3000 families, and collects yearly 10,000 dollars. The payments are made by a general almoner, to whose office all beggars and necessitous persons are directed. This officer has a discretionary power to alleviate want by a small sum; but all further relief in money, bread, or otherwise, can only be given by consent of the committee. The system seems to operate well, and no begging is permitted in the streets.

Independently of this, there are several Poor and Sick Societies. One,— "The Society of Noble Ladies,"—has 150 contributors and 15 ladies, who visit even amongst the cottages of the most destitute. Another,—a Sick Society,—has 15 male and 50 female visitors, who administer to the temporal and spiritual wants of the sick. There is also what is termed a "Sisters' Association," consisting of 50 young ladies, under 5 married superintendents. On the Sabbath, after the morning and afternoon services, they assemble a number of girls around them, whom they instruct, especially in biblical history and in singing. They visit also the homes of the children, and bring a useful influence to bear upon the parents. From time to time they are all assembled by the Prelate von Kapff for a children's service.

The meetings of the Young Men's Christian Association

are large and important. Besides the meetings of the members, an address is given weekly in connexion with the Association by a clergyman, which is attended ordinarily by about 200 young men. There is also a Young Ladies' Class conducted on the Sunday evening, and classes for the instruction of those who have been confirmed. Kapff has, in addition to these, classes especially designed for gentlemen and ladies belonging to a higher rank in life. The average attendance at these meetings is from 300 to 400.

Such efforts sufficiently attest the activity of the Christians in Stuttgart. Were further proof needed, we might refer to their City Missions, their Bible and Tract Societies, the weekly services in the Gymnasias, and Sunday evening preaching in the Poorhouse, the Soup Establishment, and other places, to which the "ragged" are expressly invited. Of "Pietist Meetings" there exist three or four in Stuttgart, each attended by from 50 to 100 persons, who meet twice a-week for the study of the Scriptures, and who further engage in works of Christian charity.

Our stay in Würtemberg, and the intercourse we enjoyed with its inhabitants, both in town and country, gave us a good opportunity to learn something of the social habits and manners of the people, as well as to mark the more prominent features which distinguish the Suabian character. We remember a *jeu d'esprit* of 1848, intended to bear on a political question, in which the German fatherland was figured as a body, the several members of which were represented by the various German states. In this symbolic portraiture the *heurt* was assigned to Würtemberg, which,—if it imply that of all that characterises the population of that country the most marked is a cordiality and warmth of feeling, and a genuine flow of heart both wide and deep,—will meet confirmation from every one who has seen the home-life of the people, and been admitted to

the inner circle of Suabian friendship. The simplicity of manners exhibited amongst the peasantry, and the strange customs which have descended, we presume, from generations long gone by, possess an attraction which few can resist whose taste for the natural and unsophisticated in men and things is not wholly lost. To convey any conception of these is impossible in any other way than by presenting sketches of actual life, or preserving the memories of the past, as Sir Walter Scott has so inimitably done in relation to his own country in his "Tales of my Landlord." This it were vain for us to attempt, and it has been already done so well by two of their own writers, Wildermuth and Auerbach, that it is the less needed. The "Village Tales from the Black Forest" of Berthold Auerbach are accessible to the English reader, and already familiar through the translation of Mrs. Meta Taylor.

Our intercourse with the Suabian people often forced upon us a comparison between them and our own Scottish race. Many of the national characteristics of the one find an exact counterpart in the other; and very much the same relationship is borne in many respects by the Suabian to the other races of Germany that we discern in a comparison of the Northern with the Southern Briton. The Suabian is reserved in his natural disposition, and exhibits a diffidence which often betrays him into awkwardness. He is cautious in admitting any one to his friendship, but the tie once formed is proportionally closer bound. His love, and with it probably every other passion and emotion, flow deep rather than near the surface. He is full of hospitality, and to a trusted friend offers proofs of kindness which a stranger to the national habitudes scarcely knows how to receive. In conversation, the Suabian has less quickness but more sense than his neighbours; in the acquisition of knowledge, he is less rapid but more tenacious; and in the pursuit of

deeper studies he does not grasp the subject by the intuitions of a momentary thought, but is far better suited to grapple with the profounder difficulties which may beset the inquiry. And whilst the Suabian is a better philosopher, he is also a better poet, than the generality of his countrymen. That a large development of the reasoning faculty is quite compatible with the richest luxuriance of the imagination Germany, and equally our own German-like poet-philosopher Coleridge, sufficiently demonstrate; and in no part of Germany is evidence so abundant as in Würtemberg. With respect, again, to those dispositions and feelings which display themselves in social and domestic life, the Suabian character is marked by that which as it is in any approaching degree wanting amongst ourselves, so—according to the principles of supply and demand, which hold as true in philological as in political economy—it is wanting in our vocabulary. We borrow, therefore, the words *Gemüthlichkeit* and *Herzlichkeit*, to express that tenderness, kindliness, true-heartedness of disposition, which it would speak more favourably to our national character were our language found to accredit its existence.

Let these characteristics of the intellectual and moral idiosyncrasy of the Suabian be applied to religion, and those differences in religious life will at once be appreciated which most distinguish his countrymen from our own, and in a great measure from his fellow-Germans. The intellect has been largely cultivated in connexion with doctrinal truth and the interpretation of Scripture by the theologians of Würtemberg, and the simpler folk are able frequently to engage in knotty controversy. The men of Tübingen we have already noticed in a former paper, and Würtemberg can boast of a lengthened succession of theologians to whom it has given birth; let us only mention Bengel, Andreaä, Osiander, Oetinger, Brenz, Rieger, Planck, Storr, Flatt,

Steinhofer, Burk, Roos, Steudel, Schmid, Beck, Dorner, Hoffmann, Palmer,—the last four of whom we have selected from its living theologians of eminence. But whilst the powers of the mind, both intellectual and imaginative, play their part and exercise their influence over Württemberg piety, the prevailing aspect is that to which the prominent position of the *heart* in Suabian character most naturally gives rise. This same *Gemüthlichkeit* and *Herzlichkeit*,—this glow of feeling and unaffected simplicity and sincerity of soul,—this true warmheartedness, is, we doubt not, that which has most deeply, and at the same time most pleasurably, struck all who have enjoyed the friendship of the Christian people of Württemberg.

Of the means by which, through successive generations, piety was kept alive in Württemberg in times of general deadness and unbelief, we have already spoken. Traces of this Bible-habit, as the Germans would call it, are left, not merely in the written works of older times, but in the more floating literature of their proverbs and popular sayings and stories. As a peculiar example of this we make room for the "Watchman's Cry," which we nightly heard at Stuttgart, and which now, probably, for the first time sees itself in type. The summons at five in the morning, the time of rising, we have already inserted in our "Sunday in Württemberg;" with it the cry at ten in the evening, the time of retiring to rest, corresponds. Each of the others consists of a simple couplet, rhyming together some Scripture idea associated with the number indicated. A kind friend has furnished an imitation in English, which we are glad to append, as very correctly preserving the spirit, and metre, and native roughness of these curious relics of an ancient time:—

9 P.M. *Neun* undankbar 'blieben sind ;
Fluch den Undank, Menschenkind.

11 Um *elf* Uhr sprach der Herr das Wort,
Geht ihr auch in Weinberg fort.

- 12 *Zwölf* Thor hat die goldne Stadt,
 Selig wer den Eingang hat.
- 1 A.M. *Eins* ist Noth ; Herr Jesu Christ,
 Lass dich finden, wo Du bist.
- 2 *Zwei* Weg hat der Mensch vor sich ;
 Herr, den schmalen führe mich.
- 3 *Drei* Personen sollen wir
 In der Gottheit ehren hier.
- 4 *Vier*-fach ist der Ackerfeld :
 O Mensch, wie ist dein Herz bestellt ?

NINE displayed a thankless mood,
 Cursed be ingratitude.

At ELEVEN the Lord did say,
 In my vineyard work to-day.

TWELVE gates has the golden heaven ;
 To the bless'd is entrance given.

ONE thing is needful,—let thine heart
 Be found by Christ, where'er thou art.

Two ways before him each man hath ;
 Lead me, Lord, the narrow path.

THREE persons in the Godhead we
 Should honour in a like degree.

FOURfold is the seed-sown ground,—
 How, O man, is thine heart found ?

The ten-o'clock curfew will serve as a study in the
 Suabian dialect:—

- 10 P.M. Höret, ihr Leut', was will i' Euch sage' ?
 D' Glock' hat *zehne* g'schlage'.
 Bewahret Feuer und Licht,
 Dass uns Gott in Gnade' behüt,
 Wohl um die *Zehne*.

Hear, ye people, what I shall tell :
 TEN times has rung out the bell.
 Put out all fire and light ;
 May God's grace keep us right
 At TEN o'clock.

T. H. G.

BRITISH MINING.

LEAD (*continued*).

HAVING in a former number sketched the history of mining for lead ore, we have now to describe the occurrence of this mineral in nature. It has been already remarked that there are numerous indications of the operation of some general law in regulating our mineral deposits. We require, however, far more searching examinations and more accurate observations than any which have yet been made, before we can expect to determine the *constants* in these great natural operations.

The same law does not appear to hold good in districts differing in their geological character. For example, the lead-lodes of Devon and Cornwall have usually a direction nearly north and south; but those of Alston Moor and northern England generally run east and west, or deviate but slightly from this direction. In the west of England the lead ores occur in well-defined *lodes*, having but a slight inclination from the vertical; in Wales, the lodes assume the character of great deposits united by *strings*; and in Durham and Northumberland the lead often lies in *beds*.

Under whatever conditions the lead ores are found, they clearly indicate the fact of their being formed from aqueous solution, and not, as was formerly believed, by any action of subterranean heat. To select an important lead district as an example will better serve the purpose of these short essays than to venture on any description of a more general character.

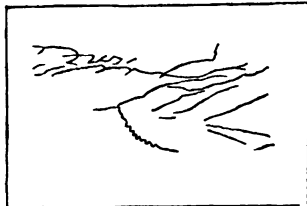
Alston Moor in Cumberland is remarkable for its mining deposits, and especially for lead; we will, therefore, confine our descriptions to it. An exceedingly graphic writer on

this locality thus describes these mineral formations: "The undulating surface of the country presents a great variety of geological strata bassetting or cropping out on the inclined surface of the hills, not uniform in inclination, but subject to many varieties of position, some of them abrupt and unaccountable. The principal of these varieties are caused by veins traversing the strata, and containing more or less of metallic ores. These veins may be briefly defined as greater or less cracks in the crust of the earth, and are comparatively not greater in proportion to the mass of the strata in the districts intersected by them than the minute cracks which would be found in a small clay model of the district when drying."

The *veins* or *lodes* of Alston Moor have a tolerably direct course for a considerable distance—some of them, indeed, for miles. They are designated *veins*, or *right-running* veins—these have a direction from a little to the north of east to the south of west; *cross-veins*, or such as have a north and south direction; and *quarter-point veins*, which include those which have a bearing between these.

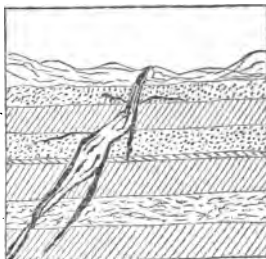
The *Hade* of veins is the mining term of the north of England, corresponding with the term *underlie* of the southern miners, which signifies the inclination of veins from a perpendicular direction. In Weardale the veins mostly *hade* to the south, and in Allendale and Alston Moor in the contrary direction.

Supposing the annexed woodcut to represent a mile of



surface in the mining district which we are describing, and that the superficial soil was removed so that an observer was enabled to look down upon the lodes, they would appear like the irregular

lines we have drawn. If there was a quarry, or any open working in the neighbourhood, so that we could observe the lead lodes as cut across or in section, they would appear as in fig. 2. The main lode is shown, and also the lateral veins which are of common occurrence. The upper side of a *hading-vein* is called the *hanging-cheek* or "*the hanger*," and the under side the *ledger-cheek* or "*ledger*."



In Alston Moor the contents of the unproductive parts of veins are chiefly described by the miners as *dowk* and *rider*; in other districts this is called *veinstone*.

The "*rider*" of some large veins is so very hard as to resist the action of the atmosphere, while the adjacent strata have suffered decomposition. Along the course of what is called the great sulphur vein at Nunstones, near Tynehead, the hill is marked by conspicuous rocks observable at a great distance—these are the so-called "*riders*" of the mineral veins. The Nunstones great copper vein, which has been, from the appearance of its *rider*, called *the back-bone of the earth*, is the largest vein in Alston, being in some places nearly three hundred feet wide. This may, however, be regarded rather as a collection of small veins, than one large one. It has been searched for copper, but not with profit.

Galena is the principal ore of lead, and is found abundantly in this and other mining districts. The ores of galena vary in their character, some producing eighty-five per cent of lead, others not more than forty. Of a rich variety, the following is the analysis :—

| | |
|-----------------------|-------|
| Lead | 85·13 |
| Sulphur | 13·02 |
| Oxide of iron | 5 |
| Lime, &c. | 1·35 |

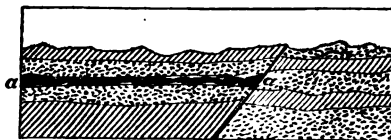
100·00

All the ores of lead contain silver; but, as already stated, the quantity varies considerably. The following table, compiled by Mr. Sopwith, shows the value of the Alston Moor lead for silver :—

| | oz. | dwt. | |
|--------------------------|-----|------|-------------|
| Thorterjile vein | 21 | 5 | in the ton. |
| Nentsberry Hags | 20 | 18 | „ |
| Windy Brow | 17 | 12 | „ |
| Rampgill | 9 | 6 | „ |
| Brownly Hill | 8 | 1 | „ |
| Blagill | 7 | 7 | „ |
| Carr's Vein | 4 | 13 | „ |

Carbonate of lead, or native white lead, is found extensively in some districts, especially in Flintshire,—it has not been abundant in the Alston Moor district. Phosphate of lead, arseniate, phosphate, and sulphates, are ores which are occasionally found; but these are rather to be regarded as mineralogical curiosities than articles of commerce.

Flat veins, or, as they are termed by the miners, *flats*, have been very productive of ore in this northern lead region. The ore in these *flats* lies horizontally, and the excavations in them are several yards in width. These are not unfrequently encrusted with spar, when they form interesting objects. These *flats* vary as much in their size and nature as veins do; sometimes no lateral extension of the veins occurs at those parts of the strata where *flats* occur. *Flats* are often very deceptive in their nature. They occasionally reach to a great extent, running with the adjoining beds like a regular stratum, as in the adjoining figure, the



flat being represented by *a a*, and then terminate suddenly

by a *back*, or joint in the strata. The London Lead Company worked a *flat* of this description for a long time very successfully, which terminated suddenly in the manner described. This, and the *faults* previously mentioned, give much uncertainty to all mining operations. The development of the Alston Moor district is mainly due to the indefatigable industry of two miners. A trial for veins on the north side of the mountain of Middle Fell had been made by a company, and after a useless expenditure of 2000*l.* the mines were abandoned, and lay neglected for eight years. In 1812, John and Jacob Walton, with some other miners, obtained leave to pursue the trial. Four men were employed to drive twenty fathoms of the level in continuation of the old workings, at four guineas a fathom, by which they made 16*s.* or 17*s.* a-week. They worked for a year and three quarters without observing any result, and they had driven into the rock seventy fathoms. In April 1814 a vein was discovered which had a good appearance, but which would not pay for working. After driving through the vein, which was two feet wide, a *rise* was made to the low flat of the great limestone (that is to say, the miners worked upwards into the superincumbent stratum), where they discovered the veins filled with carbonate of lead, or white ore. The four miners took a bargain to work the vein at 18*s.* per bing (a local mining measure of eight cwt.) until midsummer, and in that time raised 300 bings of ore, and profited 80*l.* per man. This was followed by another bargain of 16*s.* per bing, by which they cleared 25*l.* each in three months. Thus was developed one of the most extraordinary lead-mines in the world. This Hudgill Burn mine is supposed to have yielded an annual average profit to the proprietors of 30,000*l.* In 1820 its produce was 3400 tons of lead ore, since which time the quantity of ore raised has been diminishing; but the mine still gives to the indus-

trious miner nearly 200 tons each year. The entire produce of the mines of Cumberland at the present time is about 9000 tons of ore per annum, producing nearly 6000 tons of lead.

In working the lead-mines of the hill districts of this kingdom, a different practice is adopted to that which has been described when speaking of copper and tin mines.

Levels are driven into the hill, either above or below the stratum intended to be worked, but, if possible, *below*, in order that the work may fall down, and *on one side of the vein*, because the strata there are firmer than those above or below the vein.

From the level access is had to a vein by a *RISE*, which is a shaft, worked upwards, communicating from one side of the level to the vein. At the bottom there is a level space left, about three feet above the floor, for the convenience of loading the waggons, which are taken into the mine through the levels. These rises are made at fifteen or twenty fathoms from each other. When, however, it is necessary to descend to explore the lower strata, a *sump* is sunk. That which if commenced from the surface would have been called a *shaft*, is denominated a *sump* when executed underground.

All the work wrought in our lead-mines is included in the terms *ore*, *bouse*, and *deads*. The first is the productive mineralised portions of the vein; *bouse* comprehends all the work that contains any portion of ore; *deads* expressively denote the stones, earth, &c., from which no profit can be obtained. The following excellent description of the Alston Moor miner's peculiarities is extracted from a little work of much interest written by Mr. Sopwith. He is describing a visit to a lead-mine by a party of strangers, to whom the miners pay much attention:—

“Most of the miners are well acquainted with practical

mining, and with this is blended a knowledge of many facts in geology and mineralogy. But many of them are tolerably well informed on other subjects, and a friend of the author's was much surprised, in one of those *forehead meetings* (a meeting in the forehead or head of the vein), to hear Blackwood's 'Commentaries' quoted by a miner, both with accuracy and direct reference to the subject of discussion. The miners work, by what is often in other trades called, piece-work, so that time spent with strangers is taken from their own labour, and the prodigal expenditure of light is almost at their own cost. By the latter is meant the custom of miners of not putting out their candles, however numerous the company may be, and a *forehead assemblage* presents a brilliant illumination, twenty or thirty candles being sometimes placed against the wall. If any partners of the mine are present, many are the speculations on the goodness and improving prospects of the *grove*. The *bonny dowl* and *excellent rider*, as well as the ore, come in for a share of gratulation, and are often considered harbingers of the vein being still more productive. Many a lively song and joke are often added to the entertainment of such an assemblage as we are now describing. . . . It may here be remarked, that the conversation of miners sometimes has a curious effect from their assuming, as it were, a sort of volition in the mineral world. They speak of a vein being *frightened* to climb the hill, and that she, therefore, *swims* away to the *sun-side*. The throw of the strata is attributed, as it were, to the *act* of the vein,—'she *throws* the north cheek up.' These are homely, but they are also expressive modes of describing what they have frequent occasion to speak of, and they save a world of words."

R. H.

OURSELVES.

THE SENSE OF SMELL.

TASTE and Smell are twin senses ; and they often help one another, as near relations ought to do. Both of them fulfil important duties in the human economy, each in subservience to a vital function. By Taste we discriminate the different qualities of food, and, assisted by experience, determine its fitness or unfitness for nutrition. Smell is annexed to respiration, and detects with great nicety the purity or impurity of the air we breathe. The external form of the nose does not seem to influence its functions—whether it be long or short, Grecian or Roman ;* neither does the action of some small muscles connected with its external mechanism. In the human species, indeed, these muscles appear to be almost only rudimental ; and when employed they chiefly indicate states of feeling. To some of the inferior animals, when more perfectly developed, they are very useful, and to others essential to life. By them the horse dilates the nostrils to admit larger amounts of air ; the amphibia, on descending into water, use them to close the apertures.

The interior cavity of the nose is much larger than it seems to be. It is not a mere continuation of the orifices which appear at the apex ; but it is an arched vault, reaching from the openings of the nostrils to the upper and back part of the throat, gradually enlarging and again contracting

* Blumenbach and Soemmerring, however, assert that the nose is smaller in Europeans, and in other civilised races, than in those nations of Africa and America which are but little removed from a savage state, and infer a consequent acuteness and power of the sense from the larger size of the organ.

as it extends backwards. It is bounded above by the bones of the head, below by the palate bones, and behind by the soft palate. A partition or septum, made up of bone and cartilage, divides it symmetrically into two portions or fossæ. Into these project several processes of the bones of the face ; and a small bone (the turbinated), proper to the nostrils, rests on the floor of each. The regularity of the surface is thus broken up, and its extent considerably increased ; it is still further enlarged by communications with various cavities in the adjoining bones. The whole interior is lined by a soft membrane, called the Schneiderian, proper to it, which is well supplied with blood-vessels, and is studded with small glands that pour out the mucus by which it is kept moist. On this membrane, and chiefly at the upper and anterior part of the nostrils, those nerves are distributed which endow it with the *Sense of Smell*, where they form a network of most delicate texture. Some branches of the nerves of sensation communicate to it a considerable amount of feeling. It is protected by a delicate layer of the cuticle, called here the *Epithelium*. The functional purposes of the membrane are still further promoted by the *ciliated structure* of the epithelium. This requires a little explanation. If a small portion of this membrane, or which shows it still better, of the palate of a frog, is submitted to the microscope and the section examined, it is found to consist principally of a series of little cylinders which stand upright or obliquely together, making a sort of palisade, topped or fringed with ciliæ. These ciliæ are minute hairs, like the pile on plush or velvet. A magnifying power of 200 diameters shows them distinctly.

They seem to be always in motion ; vibrating either backwards and forwards, or circularly ; drifting along any molecules which come within the range of their influence. The same structure and movements are discernible in the

windpipe and larger branches of the air-tubes; in the canals connected with the eyes and ears; on the membrane which lines the cavities of the brain; and in several of the membranous tubes. Nor are they confined to the human species or to the mammalia; but they are extended to the amphibia, to reptiles, and to the invertebrata. As the movement of these ciliæ is quite energetic, and continues, though the piece of membrane under examination is separated from all connexion with the neighbouring parts, it clearly does not depend on the circulation of the blood, nor on any direct communication with the nervous system; nor is it under the influence of the will, as are the fringed appendages possessed by some polypes and infusoria. The number of the vibrations differs a good deal in a given time; some observers have counted 70, others 100, or 300 in a minute. Few stimuli seem to accelerate the movement; many substances retard, and some suspend it. Heat, electricity, galvanism, cold, ammonia, ether, salt, check it in various degrees, and in relation to their amounts of concentration and power. It continues after death. In the mucous membrane of the rabbit's trachea, it remained for five or six days; in that of the frog's mouth for eight or nine; in the œsophagus of the tortoise for fifteen days, after the animals were dead. It is highly probable that in the human nostrils, this movement assists the sense of smell, by producing currents in the impregnated air; and so subjecting larger amounts of it to every part of the sensuous surface.

Thus prepared, the surface is exquisitely susceptible of its proper stimuli. These are the effluvia which emanate from all odorous bodies. The delicacy of the organisation, and the acuteness of the sense, may be appreciated in some degree by the extreme subtlety of the odorous particles. Certainly they are the rarest forms of ponderable matter by which the senses can be impressed. If we dissolve a pre-

cise amount of any odorous substance in water, or diffuse it in air, and afterwards reduce it by definite dilutions, we come to know the smallest quantity that can be distinctly recognised. A space of air containing only a *two hundred thousandth* part of bromine vapour, gives an unpleasant smell; a portion of air containing the *one-millionth* part of sulphuretted hydrogen gas gives a distinct odour. Essential oils are still more powerful. The *ten-millionth* part of a grain of otto of roses, will give rise to its peculiar odour, and the smell remains for many months. Oil of cloves is a little less effective, but nearly as durable. Musk is quite as powerful and more lasting. The *thirteen-millionth* part of a grain of musk dissolved in spirit of wine, and then diluted with water, can be quite distinctly recognised. And in addition to this, it must be remembered, that even this quantity, this modicum, is not applied in its fluid state to a definite point on the surface of the membrane, but it has to be diffused in the air, and then presented to a considerable portion of the organ; the limit, therefore, seems to be almost illimitable.

The delicacy of the sense differs a good deal in different persons. Some do not possess it at all. Belzoni and Wordsworth are said to have been quite without it. Many substances agreeable to one person are disagreeable, and even inodorous, to others. Most odours are repulsive if in excess.

The utility of the sense is not confined to its detecting the purity or impurity of the air; nor indeed does it determine quite distinctly its fitness or unfitness for respiration unassisted by experience and observation: for although a disagreeable smell almost always denotes a foul atmosphere, and that the air so tainted is unsuitable for the purposes of life; yet an agreeable, or even negative odour, is no sure proof that the air is wholesome; the vapours of ether and chloroform are deleterious, and yet not disagreeable: but

smell is a powerful auxiliary to taste, which without it would be to a great extent vague and limited.*

It is, moreover, a source of real gratification. They who live in the metropolis, or within the confines of large towns, and who are treated chiefly to the fumes of tobacco,† the odours of "escaping gas," or to the aroma proceeding from dead animal and decaying vegetable matters; or who only know what fragrance means as yielded by some poor flaccid and besooted flowers imported from the neighbouring florists; or by the tainted waters of the perfumer; can hardly appreciate the value of the sense in this respect, or calculate its additions to the sum of human enjoyment. He forms a much truer estimate, who has been roused by—

"The breezy call of incense-breathing morn:"

"Who knows a bank whereon the wild thyme blows;
Where oxlips and the nodding violet grows;
Quite overcanopied with lush woodbine,
With sweet musk-roses and with eglantine:"

who has nuzzled in the richness of a fresh-gathered and dew-bemoistened rose: or, walking with "Meditation" Hervey, along the hedge-rows, or across a bean-field, or in the garden, has shared his enjoyments, and perhaps used his language: "What sweets are these which so agreeably salute my sense? They are the breath of flowers; the incense of the garden. How liberally does the jasmine dispense her riches! How deliciously the woodbine has embalmed this morning walk! The air is all perfume.

* The communication between the organs is by the posterior nerves.

† As the Sumptuary Laws are asleep, it does not seem worth while to arouse them for the purpose; and as any enforcement of the laws against "offences done to the person" might seem to infringe on the liberty of the subject; we must be content with hoping that this nuisance will be abated, by an extension of the new enactment, obliging the votaries to the Virginian weed at least to "consume their own smoke."

How delightful is this fragrance ! distributed in such nice proportions, it neither oppresses nor eludes my perceptions. Here luxury itself is innocent ; indulgence incapable of excess. This entertainment not only regales my sense, but cheers my soul ; instead of clogging, it elates its powers."

We linger for a moment to notice the happy transfer of terms by which the *language of sense* is employed to express our mental perceptions and emotions. Thus, we say, "Such a man has good *common sense*;" of another, that "he is a person of fine *taste*." We *feel* the force of an expression ; and *see* the drift of an argument. Of such an one, we remark that "he is in good *odour*." Mrs. Rowe, with her usual tact and delicacy, sings—

———— " I sleep,
But still my *listening* fancy wakes."

And Shirley,—

———— " The actions of the just
Smell sweet and blossom in the dust."

How grateful *this* perfume is ! How long it lasts ! Though Archbishop Leighton has been dead for nearly two centuries, the air of Horsted Keynes, where the holy man lived and was buried, seems still redolent with his good name. After a lapse of 1800 years the odour of the ointment, poured by the penitent woman on the feet of her forgiving Lord, is yet fragrant ; and sanctifies our regard for her, who "did all she could, and came beforehand to anoint His body to the burial."

P. S.

A NEW METHOD OF DEMONSTRATING GEOMETRICAL PROPOSITIONS.

“Segnius irritant animos demissa per aurem,
Quam quæ sunt oculis subjecta fidelibus, et quæ
Ipse sibi tradit spectator.”—*Hon. de Art. Poet.* 180.

IN the catalogue of those studies which have contributed their benign influences to elevate and improve the human understanding, the science of Mathematics yields precedence to none. Astronomy, Optics, and all the higher branches of Natural Philosophy, are mainly dependent upon it for the verification of their principles; and independently of being thus one of the most useful of pursuits to the well-constituted mind, it is one from which the purest enjoyment can be derived, inferior only to the cultivation of religion and the practice of virtue. So highly esteemed were mathematical acquirements among the ancients, that the illustrious Plato believed that Geometry continually employed the mind of the Most High, and Cardan well expresses the sentiments of those who are proficient in this branch of learning when he says, “Honorificum magis est et gloriosum hæc intelligere quam provinciis præesse formosis aut ditem juvenem esse.” Education may be termed the art of so cultivating the mind as to render it a more powerful and exact instrument than it could be otherwise, for the discovery, acquirement, and propagation of truth, whilst fitting it to be a better guide in the regulation of our conduct, and in the successful prosecution of those matters to which the attention may be turned. In order to attain results so desirable, a habit of strict reasoning and a power of commanding our ideas must be acquired, or else the mind will be continually diverted by frivolous and transient affairs. As Dr. Abercrombie has said, “It may not, indeed, be going too far to assert that our condition in the scale both of moral and intellectual beings,

is, in a great measure, determined by the control we have acquired over the succession of our thoughts." Such a discipline is conferred upon the intellect by all branches of mathematical study, but more especially by Geometry. The cause of this superiority is abundantly evident: for when the definitions are clear; when the postulates cannot be refused nor the axioms denied; when, from the distinct contemplation and comparison of figures, their properties are derived through a well-conducted train of inevitable argument, there is naturally gained a habit of close, exact, and methodical reasoning; a habit which strengthens and sharpens the mind, and which, being transferred to other topics, is of general importance in the pursuit of truth.

Accordingly, Euclid's Elements of Geometry have always been considered even by those who are not mathematicians as an excellent Logic, and an invaluable means of mental discipline.

Whilst feeling great diffidence in proposing any new system connected with such a science, the writer is persuaded that the method which he now introduces to the reader's consideration is superior to that generally in use. Its advantages appear to be threefold.

Firstly, The learner is enabled at a glance to perceive the real argument, the main reason upon which the truth of the proposition depends. Now, every one accustomed to scientific teaching must be aware how necessary it is to consider the functions and character of the faculty which we call memory. These functions they well know are twofold,—*remembrance* and *recollection*; the former consisting in the power of stowing away facts, the latter in the power of recalling them at pleasure. That the memory may accomplish its work of recollection, it must rest upon thorough comprehension of the subjects under consideration, without which it would be quite possible for a youth to commit the whole of Euclid accurately to memory, and yet not obtain a

single correct geometrical conception. Much of this may be attributed to the fact that the memory is so much over-exerted in retaining all that mass of verbiage which envelopes the present editions of Euclid, and the attention is so much engaged thereby, that it is almost impossible for the student to bring his *intelligence* to bear upon the true arguments of the case. In the method now submitted this defect is obviated, and the reasoning is rendered plain and distinct.

Secondly, It enables one who may be desirous of refreshing his memory by looking back to propositions he has learnt before to read just so much as he desires, and no more. Next in importance to the habit of working from intellect, and not from memory, is the custom of ascertaining by occasional reviewings the extent and firmness of the path we have already passed over—a custom which excites and keeps alive that mental activity which is so necessary to the surmounting of difficulties and the pursuance of a continuous progress. The advantages arising from such a habit are by no means confined to any one science; but it would be of peculiar use to the student of Euclid, were it not that the ordinary editions of that work render it necessary for him to reperuse the whole of the propositions which he desires to restore to his memory, and thus so much labour is expended and time lost that the good effects are nearly counterbalanced by the inconveniences of the system. In the mode now before you, a mere cursory inspection will bring back to the mind the arguments required, and thus preclude the necessity of further retrospective glances.

Thirdly, It retains the successive links in the chain of reasoning in the order of their relative importance. Those acquainted with mathematical reasoning will know that the principal difference between it and that of ordinary logic consists in the progressive form which distinguishes it. Dr. Whewell says of this, "The chains of the logician generally consist only of two or three links. In mathe-

matics, on the contrary, every theorem is an example of an extended progressive chain ; every proof consists of a series of assertions of which each depends upon the preceding, but of which the last inferences are no less evident or no less easily applied than the simplest first principles." Where such reasoning as this is intended for exposition it is of great consequence that the consecutive arguments should be plainly exhibited,—the slightest obscurity would be apt to induce a young mind (in order to save itself the trouble of investigation,) to take the conclusions of the text-books as infallibly right,—a habit which should never be tolerated, for the conviction they carry should alone be sought in the evidence they produce. "The faculty of pursuing such processes (mathematical reasonings) readily and safely," says Dr. Olynthus Gregory, "is of inestimable value ;" and where, as in the method of which we are now treating, the links in the chain of reasoning are clearly, as it were, mapped out, the task is one of comparative ease.

If the advantages of this method are as manifest to all as they are to myself, then, indeed, it will contribute in no mean degree to accustom and prepare the student to carry forward in his mind a system of original investigation ; and this, be it not forgotten, is the legitimate aim of all scientific training. But, whatever may be the success of this design, I shall at least have the satisfaction of reflecting that I have attempted, to the best of my abilities, to render more smooth the rugged path which the learner must pursue in mounting to that scientific eminence from which he may survey, in its almost boundless expanse, that empire which the geometicians have erected for themselves in the realms of figure.

To illustrate this necessarily short and imperfect account of what I term "The Analytical Method of Demonstrating Geometrical Propositions," I subjoin that beautiful piece of reasoning, the 47th proposition of the first book of Euclid.

F. M. D. D.

Book I. Proposition 47, Theorem.

In any right-angled triangle, the square which is described upon the side subtending the right angle is equal to the sum of the squares described upon the sides which contain the right angle.

Let right-angled $\triangle ABC$ have right angle BAC. Then $BC^2 = BA^2 + AC^2$

On BC, BA, AC, describe squares^a BE, BG, AK

Draw AL \parallel ^b BD or CE. Join AD, FC

$\{ GA \parallel FB \dots\dots BG \text{ is a square}^c$

$\{ GC \parallel FB \{ \begin{array}{l} AC \text{ is in rt. ln. with } GA \dots \angle BAC + BAG = \{ 2 \text{ right angles}^d \end{array}$

$\{ \text{Base } FB \text{ com. to } \triangle FBC \text{ and sq. } GB$

$\{ AL \parallel BD$

$\{ \text{Base } BD \text{ common to the triangle } ABD \text{ and the rectangle } BL$

$\{ AB = BF^a \dots\dots GB \text{ is a square}^c$

$\{ BC = BD^b \dots\dots BE \text{ is a square}$

$\{ \angle DBC = \angle FBA^e \{ \begin{array}{l} \angle DBC \text{ is a right angle} \dots BE \text{ is a square}^c \\ \angle FBA \text{ is a right angle} \dots GB \text{ is a square}^c \end{array}$

$\{ \angle DBA = \angle FBC^c \{ \text{Add to each } \angle ABC$

$\{ \text{May be demonstrated similarly by joining } AE, BK \text{ that } AK = CL$

$LC = AC^2$

$BC^2 = BL + LC$

Wherefore, &c. &c. Q.E.D.

^a 46. I.

^b 31. I.

^c 2 Ax.

^d Hyp. and 30 def.

^e Cons.

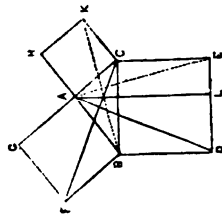
^f 41. I.

^g 11 Ax.

^h 30 def.

ⁱ 4. I.

^j 6 Ax.



REVIEW OF THE MONTH.

THE month of April has deprived British Geology of two of its most distinguished ornaments, G. B. Greenough, Esq., and Sir Henry De la Beche. The former was among the patriarchs of science, having been born in 1778. Sir Henry was born in London in 1796. His name will long be illustrious as the virtual founder of the Jermyn Street Museum, and as the originator and director of the Geological Survey of England and Wales; whilst it is not too much to say, that thousands have owed their first initiation into the most popular of the modern sciences to his "Manual of Geology."

The building in Queen Square erected for the use of the Bloomsbury Branch of the Young Men's Christian Association, was opened on the 20th of April with a breakfast, over which Sir Morton Peto presided. This handsome and commodious structure provides a rendezvous, almost princely, for the young men of the district, and, we doubt not, is destined to be the scene of numerous lectures and social reunions, under the auspices of the excellent clergymen and laymen with which the neighbourhood abounds.

Last year (vol. i. p. 240) we announced an interesting movement among the Romanists at Geneva. It is cheering to find that the good work continues. Last Easter forty-five converts from Popery were received into the Reformed Church in the cathedral of St. Peter.

To Mr. Collins of Glasgow we are indebted for a copy of his "Self-explanatory Reference Bible." Its distinctive feature is that the parallel passages, or "references," are not merely indicated, but are printed in words at length. The

convenience of this method is abundantly obvious, and the work is a great acquisition to the biblical student.

Mr. Jackson has published his *Life of Dr. Newton*,—that burning and shining light of the Wesleyan ministry. With less of incident than we expected, it is a wonderful record of cheerful, daily, life-long labour, and another striking example of the power which still attends the preaching of "Christ crucified."

"Modern Jesuitism," by Dr. Michelsen, is not, like some *brochures* with similar names, a book of gossip or idle declamation, but it is an account of the recent history, throughout Europe, of the most mysterious, and at the same time, most mischievous of anti-social organisations. It is an interesting narrative, by a well-informed writer.

Writing to the "Athenæum," Mr. Finn, the British Consul at Jerusalem, mentions that, from an analysis made in Liebig's laboratory, it would appear that the mounds of blue-grey refuse found outside of the Damascus Gate are, most probably, the ashes of the ancient burnt-sacrifices.

Speaking of Jerusalem, it was with much interest that we lately viewed in the studio of Mr. T. Seddon some paintings which he has lately finished in the Holy Land. The Præ-Raffaelite style in which they are executed suits the subject well, and, having been completed on the spot, the soil, the herbage, the light, the atmosphere, as well as the more conspicuous objects, are represented with a truth and impressiveness unrivalled, as far as our experience goes, in any pictures from Palestine. How we wish that there were some Museum of Scripture-Illustration, in which such works could be preserved for the instruction and delight of those who have no opportunity themselves to visit the Lands of the Bible!

ENGLISH LETTER-WRITERS.

LADY RACHEL RUSSELL.

As we hinted at the close of our sketch of Lady Mary Wortley Montagu, our present paper will be devoted to an eminent letter-writer of very different stamp—to “that sweet Saint,” as Rogers calls her in his “Human Life,”

“ Who sate by RUSSELL’s side
Under the judgment-seat.”

The contrast between Cowper and Walpole was striking ; but not more so than that between these two memorable persons. Lady Mary was a witty, cold-hearted, beautiful woman of the world—an object of wonder and admiration, but not of love. Lady Rachel was essentially a loveable woman. Gentle and pious and retiring in the hour of serenity, she was firm and high-souled in the hour of peril, and trustworthy in the hour of temptation. Lady Mary seems to us to have been like a brilliant icicle, which sparkles and dazzles as it hangs in the cold sunlight of a northern winter ; Lady Rachel like a pure fountain which wells up silently from the turf in a southern land, and steals softly along among the herbs and flowers, a blessing to everything which it comes near.

She was the second daughter of Thomas Wriothesley, earl of Southampton, by his first wife Rachel de Rouvigny. She was born about the year 1636, and lost her mother in infancy. Lady Rachel’s elder sister married Mr. Noel before his father Viscount Campden was made Earl of Gainsborough.

At the time of Lady Rachel Wriothesley’s birth England was just beginning to pass through that sea of troubles

which ere long became a sea of blood. Her father disapproved of the measures of Charles the First both before and during Lord Strafford's government; and he kept aloof from the court, and was looked on suspiciously as a "people's friend," until Lord Strafford's trial, when, as he thought that the monarchial form of government was itself in danger, he became a privy-councillor, and cast his lot in with the king. He was with him at York and Nottingham, at Edgehill and Oxford. He was one of the royal representatives at the famous and futile Uxbridge conferences, the pretended aim of which was peace. And when all means of restoring harmony failed, he would not desert Charles, although he was opposed to many, if not most, of his theories. He was faithful to him to the last; and was one of the four who paid their last duties to his remains after his execution.

During the Commonwealth he retired to his seat at Tichfield; and he did not return to public life till the Restoration, when he was made Lord Treasurer. This office he did not long hold, nor would he have retained it as long as he did had Charles the Second had his own way; for the "wise and virtuous Southampton," as Burnet styled him, was no fit servant for such a king. But Death, who cancels all appointments, soon terminated his. He died in 1667, a few months before his friend Clarendon, whom he defended to the last, was so shamefully disgraced.

Such was, in brief, the career of Lady Rachel's father. He seems to have been a man of warm sympathies, and, for his time, of liberal views. As he was so little engaged in politics during her childhood, she must have had much intercourse with him; and we know that in Dr. Fitzwilliam, his chaplain, she had, if not a tutor, an affectionate and learned, although narrow-minded friend. In other respects her education would seem to have been deficient. It was a very different matter in her days from what it is now. She

spelt badly and wrote ungrammatically, long after she had become one of the "Mothers of England."

During her father's temporary retirement from public affairs, viz. in 1663, she was married to Lord Vaughan. Miss Berry, in her delightful memoir, indicates a suspicion, founded on a passage in one of her letters, that in this union "it was acceptance rather than choice on either side." Be that as it may, she evidently made herself beloved by her husband's family. She had a child in 1665, which died immediately; and in 1667 she was a widow.

But she did not long remain so. Mr. Russell, third son of the earl of Bedford, sought her hand; and in 1669, after about two years of courtship, she was married to him. As he did not come to his title of Lord Russell till 1678, when his elder brother died, she continued to be addressed by the style of Lady Vaughan till that time.

And with this marriage commenced one of the happiest and truest unions ever solemnised between two members of the human family. It was a union of intellect as well as of heart; it was based on worth and real esteem; it wore well; it endured pure and entire for fourteen years; and was only terminated at last by the murder of the husband by his voluptuous king.

They had three children, two girls and a boy. We shall choose to let Lady Rachel exhibit some few characteristics of herself and her wedded life here in very brief selections from her letters to Mr. Russell, written at times when they were at a distance from each other; before passing on to that catastrophe of their life-drama which changed its almost Arcadian scenes into a tragedy.

In 1672, three years after their marriage, she says to him:—

"If I were more fortunate in my expression, I could do myself more right when I would own to my dearest Mr. Russell what real and perfect

happiness I enjoy, from that kindness he allows me every day to receive new marks of; such as, in spite of the knowledge I have of my own wants, will not suffer me to mistrust I want his love, though I do merit, to so desirable a blessing; but, my best life, you that know so well how to love and to oblige, make my felicity entire, by believing my heart possessed with all the gratitude, honour, and passionate affection to your person any creature is capable of, or can be obliged to; and this granted, what have I to ask but a continuance (if God see fit) of these present enjoyments? if not, a submission without murmur to His most wise dispensations and unerring providence; having a thankful heart for the years I have been so perfectly contented in. He knows best when we have had enough here. What I most earnestly beg from His mercy is, that we both live so as, whichever goes first, the other may not sorrow as for one of whom they have no hope. Then let us cheerfully expect to be together to a good old age; if not, let us not doubt, but He will support us under what trial He will inflict upon us. These are necessary meditations sometimes, that we may not be surprised above our strength by a sudden accident, being unprepared. Excuse me if I dwell too long upon it; it is from my opinion that if we can be prepared for all conditions, we can with the greater tranquillity enjoy the present, which I hope will be long; though when we change, it will be for the better, I trust, through the merits of Christ. Let us daily pray it may be so, and then admit of no fears. Death is the extremest evil against nature, it is true; let us overcome the immoderate fear of it, either to our friend or self, and then what light hearts may we live with!"

In 1675 she writes to him:—

"Though I did wish my best life would not give himself the trouble of writing to me so soon, yet I desire he will believe there is no earthly thing can please me so well as what he says to me; so that, when I cannot hear him speak, his letters are my best delights: though I am with our little girl, who is, I bless God, very well, and extremely merry, and often calls Papa. She gets new pretty tricks every day. . . . I am going to see Miss end her supper and then undress, at which time she is very pleasant; and it is my best entertainment till I see again my Mr. Russell, whose I am entirely."

In 1679:—

"I heard yesterday morning you got well to Teddington, so I hope you did to Basing, and our poor Stratton, and will by Saturday night to

the creature of the world that loves you best. . . . Our small ones are as you left them, I praise God. Miss writes and lays the letters by that papa may admire them when he comes. It is a moment more wished for than to be expressed by all the eloquence I am mistress of; yet you know how much that is."

In 1681:—

"The report of our nursery, I humbly praise God, is very good. Master improves really, I think, every day. Sure he is a goodly child; the more I see of others, the better he appears; I hope God will give him life and virtue. Misses and their mamma walked yesterday after dinner to see their cousin Allington. Miss Kate wished she might see him, so I gratified her little person. This is all at this time from yours most entirely."

"To see any one preparing and taking their way to see what I long to do a thousand times more than they, makes me not endure to suffer their going without saying something to my best life; though it is a kind of anticipating my joy when we shall meet, to allow myself so much before the time; but I confess I feel a great deal that, though I left London with great reluctance, yet I am not like to leave Stratton with greater. They will tell you how well I got hither, and how well I found our dear treasure here. Your boy will please you; you will, I think, find him improved, though I tell you so beforehand. They fancy he wanted you; for as soon as I alighted he followed, calling Papa; but, I suppose, it is the word he has most command of; so was not disoblged by the little fellow. The girls were fine, in remembrance of the happy 29th September (Lord Russell's birthday), and we drank your health after a red-deer pie; and at night your girls and I supped on a sackposset; nay, Master would have his room, and for haste burnt his fingers in the posset; but he does but rub his hands for it. . . . I would fain be telling my heart more things—anything to be in a kind of talk with him, but I believe Spenser stays for my dispatch; he was willing to go early, but this was to be the delight of this morning and the support of the day. It is performed in bed, thy pillow at my back; where thy dear head shall lie, I hope, to-morrow night, and many more, I trust in His mercy, notwithstanding all our enemies or ill wishers. Love, and be willing to be loved by

"R. RUSSELL."

In September 1682 she concludes a letter thus:—

"I know nothing new since you went; but I know as certainly as I live that I have been for twelve years as passionate a lover as ever woman

was ; and hope to be so one twelve years more. Happy still, and entirely
yours,
" R. RUSSELL."

Alas ! before twelve *months* had passed, this life of happiness was roughly broken in upon, and her innocent husband was killed on the scaffold.

The circumstances under which he suffered made him a martyr. His danger made her a heroine. She wrote to him in 1683 as he sat in the Tower a prisoner on a charge of treason :—

" Your friends believing I can do you some service at your trial, I am extreme willing to try. My resolution will hold out—pray let yours. But it may be, the Court will not let me ; however, do you let me try."

He consented to do so, and her resolution did hold out. The story of his trial is so familiar, or ought to be so, that much detail of it is unnecessary. If our younger readers need to be informed where they may best get at the truth of the black business, we refer them to Lord John Russell's *Life of his ancestor*.

Suffice it to say here, that Lord William had ever spoken for liberty, Protestantism, and the right of resistance to unconstitutional acts on the part of the sovereign. These principles were adverse to Charles II. and his brother the Duke of York, afterwards James II., and he was murdered. A noble, reticent, brave, good man,—one in whom was nothing of the braggart or the demagogue ; he seems to have been alike worthy of the love of his heroic wife, and of the hatred of his king.

He was treated with injustice at every step of his trial. The jury was not a legal one. There was no Act of Parliament under which he could legally be tried on his indictment. The witnesses against him were discreditable ; and even if credible, not in law sufficiently numerous to justify condemnation. And—which was, however, then the custom—he was not allowed counsel.

But he was not deserted. Many of England's best and noblest stood forward to witness for him, where none but the basest testified against him. And his noble wife's resolution thus held out.

Lord Russell.—"May I have somebody write to help my memory?"

Mr. Attorney General.—"Yes : a servant."

Lord Chief Justice.—"Any of your servants shall assist you in writing anything you please for you."

Lord Russell.—"My wife is here, my lord, to do it."

Lord Chief Justice.—"If my lady please to give herself that trouble."

She rose at once, the brave and loyal wife, and took her place with quiet dignity. During the whole of that dismal trial she sat there, writing for him; and we read that she so far controlled the natural feelings of her woman's nature, that she neither disturbed his attention or the court throughout it all.

He was declared guilty of high treason, and next day was sentenced to be hanged. The king afterwards changed the mode of death to decapitation.

From the day of his arrest he knew and said that nothing short of his death would satisfy his enemies, and he said so still. But Lady Rachel left no effort untried to save him. She flung herself at the feet of the king; she petitioned, and induced others to petition. As Lord Russell exclaimed, with tears in his eyes, "she beat every bush for his preservation." He would not hinder or discourage her, for he knew how much her sorrow would be mitigated afterwards by the reflection that she had left nothing undone. But, notwithstanding her reposeless anxiety to save him, she would never tempt him to buy existence by renouncing principle or confessing guilt. Dr. Tillotson and Dr. Burnet both endeavoured to induce him to allow that resistance of authority

was unlawful : the latter believed that Charles would have pardoned him if he had done so. But he was firm, and true to the opinion that "a free nation may defend their religion and liberties when invaded and taken from them, though under pretence and colour of law." And his high-minded wife supported him in his steadfastness.

His enemies were swift in their fell work. Seven days only were allowed to elapse between his trial on the 13th of July, 1683, and his execution. Burnet was with him every day, and he testifies abundantly to the magnanimity of Lady Rachel and the tenderness of her husband. "I never saw," he says, "his heart so near failing as when he spake of her. Sometimes I saw a tear in his eye, and he would turn about and presently change the discourse."

The night before his execution she left him at ten o'clock. "He kissed her," says the same eye-witness, "four or five times ; and she kept her sorrow so within herself, that she gave him no disturbance at their parting. After she was gone, he said, 'Now the bitterness of death was past,' and ran out into a long discourse concerning her, how great a blessing she had been to him, and said what a misery it would have been, if she had not had that magnanimity of spirit joined to her tenderness, as never to have desired him to do a base thing for the saving of his life. He said there was a signal providence of God in giving him such a wife where was birth, fortune, great understanding, great religion, and a great kindness to him. But her carriage in this extremity went beyond all."

She left him, we say, at ten o'clock at night. The harsh gates of Newgate prison, which had grated so often during the past week as the obsequious turnkey swung them open for her admission, clashed behind her for the last time. She would not need to go there any more. The hopes which she had cherished during that long week to save him

—to have him reprieved, if nothing else—were all scattered on the winds. The delicate and high-born lady, like the wife of the meanest felon, had parted from the husband of her youth and the father of her children, in his dreary dungeon, and she was never to see him again alive. Never! unless her loving eyes could bear to look upon the awful scene in Lincoln's Inn Fields, when he laid the head which had been so often pillowed on her bosom on the block, and the inexpert headsman hacked it from his shoulders. Never! did we say? The dismal sound of those gates as they groaned on their hinges was the last which she heard as she left him, and it rang long and sadly in her ears: but it was ere long drowned by the praises and acclamations of a nation whom her husband's blood helped to set free; and long, long ago, the martyr for liberty and the pious wife whom he loved have rejoined each other, and entered, we may reverently hope, upon a life of joy to which their earthly happiness was as nothing, and which no tyrant can ever again destroy.

This was the melancholy climax of her story. The remainder of her life, as might be expected from the former part, was characterised by piety and meek firmness, but a veil of sorrow was over all. At first she describes herself as "*amazed* with grief." Soon afterwards she writes,—

"My heart mourns too sadly, I fear, and cannot be comforted because I have not the dear companion and sharer of all my joys and sorrows. I want him to talk with, to eat and sleep with. The day is unwelcome, and the night so too; all company and meals I would avoid, if it might be."

She dwelt upon those hasty scenes, reflecting anxiously whether everything possible had, after all, been done to save him. Her heart shrank when she looked on his and her children, and remembered the pleasure he took in them.

But religion had been the basis of her happiness during her husband's life, and it was her support now.

"'Twas, doctor, an inestimable treasure I did lose," she writes to Dr. Fitzwilliam, "and with whom I had lived in the highest pitch of this world's felicity. But having so many months mourned the substance, I think, by God's assistance, the shadows will not sink me." "I endeavoured to suppress all wild imaginations a melancholy fancy is apt to let in, and say with the man in the Gospel, 'I believe, help Thou my unbelief.'"

Her chief thoughts (next to her husband's memory) were given to her children. She speaks most anxiously of her "young creatures;" she thinks how she can help, and teach, and be an example to them; and in her efforts to do her duty by them she was warmly and affectionately aided by the old earl, her lord's father.

She saw them all well settled. Her eldest daughter was married, in 1688, to Lord Cavendish, eldest son of the Earl (afterwards Duke) of Devonshire, just one week before the trial of the seven bishops for "resistance" in matters spiritual to James, then King of England, and just one week before the young bride's father-in-law elect signed the invitation to William of Orange to come and take the throne, which it was intolerable that the Stuart line should disgrace any longer. Of that invitation we all know the glorious result. The "Divine Right" of kings became a byeword; and not only was "resistance" made lawful, but, as Defoe says, "the right of the people was established to limit the succession of the Crown." Of Lady Rachel's sympathy with these movements we need not adduce proof: her regret was that her lord had not lived to rejoice in them with her. William had sent her his expressions of condolence on her husband's death; and one of the first acts of the reign of that great, and noble, and stern sovereign, was the reversal of Lord

Russell's attainder, and the declaration that his execution was a "murder."

Lady Rachel's second daughter was married, in 1692, to Lord Roos, eldest son of the Earl of Rutland; and her son, in 1695, to Miss Howland. These marriages all took place, as was too often the custom in those days, when the contracting parties were mere children. Lord Tavistock was only fifteen years of age, and was preparing for college when he married. Some friends wished at the same time that he should stand for the representation of Middlesex, but to this Lady Rachel gave a decided refusal. Next year he was sent to Cambridge, where he remained some time, and he then went abroad for two years with his tutor. While in Italy he gambled, and lost large sums of money; and a most pathetic letter is extant from his mother to the Duke of Bedford, asking his assistance to pay them.

In the next year the old Duke died, and Lady Rachel's son succeeded to the estates and title. The latter, as the preamble to the patent states, had been made from an earldom into a dukedom, to comfort one of the best of fathers for so unspeakable a loss as the death of Lord William, to solemnize the memory of that most excellent son, and to excite the emulation of a worthy grandchild, that he might, with more vigour, tread in the steps of his truly great father. King William was most anxious to do all that lay in royal power to prove his esteem for and sympathy with the family of his predecessor's victim.

But the young Duke did not very long enjoy his honours. In 1711 he was seized with small-pox. In our time we have but little conception of the ravages of that dreadful plague, or of the terror which its presence excited. The duchess and her children fled, but his faithful old mother would not fly. True to the last to the son, as to the father, she remained by the dying man, and gave him all the com-

fort and consolation in her power, to the very end of his mortal journey.

Of the rest of that life of patience, and love, and sorrow, we say no more. It was protracted to a great age, for she was eighty-seven when she died. To the last she exhibited the same virtues that had made her life lovely, and she was respected as well as loved by all who knew her. She died on her husband's birthday, the 29th Sept. 1723; and she was buried at Chenies, by his side. To her surely, if to any mortal, the language of holy Mr. Herbert may be applied, where he says,—

“The actions of the just
Smell sweet, and blossom in the dust.”

Of her Letters, as such, we need not speak further. They neither show brilliancy nor wit. She was too much of a woman ever to have been a blue-stocking, if she had lived further on in the century. But they contain what many letters of far more literary persons are wholly devoid of,—simplicity, gentleness, shrewdness, genuine womanliness, and devotion to Truth. They open to those who read them, knowing her Life, a view of humanity unequalled in fiction; and to all true women she must ever be, like Adonais to the poet,—

“A star
Which BEACONS from the abodes where the Eternal are.”

C. M. C.

SCENES IN HISPANIOLA.

II. THE MACORNING.

THE priest's mule was caught and saddled, and he himself, having brought out his fowling-piece, which bore marks, in its cleanness and brightness, of frequent use, set foot in stirrup. He was clad in a suit of faded black, (for though the rays of the sun were fervent, he never so far forgot the dignity of his cloth as to go abroad in coloured garments,) consisting of breeches and a *chaqueta*, or sort of sleeved tunic fastened down the front with a row of small pearl buttons. A shot-belt and powder-horn were slung over his shoulder, and a very expansive *sombrero* of plaited palm-leaf shaded his person, and almost his beast also, from the vertical ray. A cur of mongrel breed, but trained to aid in sporting excursions, followed the heels of the party as they set out.

The sun was fast climbing the sky, and was pouring down his torrid beams unmitigated by a breath of air, for the land-wind of the night had died away, and the sea-breeze had not yet come in. As soon, therefore, as the travellers had left the grateful shadow of the village-groves, they found themselves almost as in a furnace. The priest was inclined to corpulency; he had wiped his face, and fanned himself with his *sombrero* till the scorching of his bald pate made him put it on again; and at length he sued for a truce. "*Tente! tente!* I am melting," said he, dolefully; "presently you will see nothing but a mass of melted grease running down the mule, instead of *un pobre heremito*. Let us draw up beneath this caimite for a few moments."

The evaporation of the foliage produced a coolness under

the umbrageous tree, that refreshed the feelings, and even caused a current of air, sufficient at least to flutter the beautiful leaves, and to display the contrasts of colour, glossy green above, and golden bay on the under surface, by which they are distinguished. A rapid tapping was among the boughs, and Don Carlos, whose eye and ear were awake, directed the attention of his companions to it.

"Ah!" said he, "that is a beautiful species of the woodpecker tribe."

"We call it the *carpentero*, because it hacks and hews the timber," replied Gomez.

"Nay, that is my bird," said the Padre; "I must not have him called a *carpentero*. Look at his scarlet cap and thighs. Do carpenters wear the red hat and hose? No, no, he is something better than a carpenter! Don Carlos, I love to look on that bird."

"I am pleased to find you can admire the beautiful in Nature, it does honour to your taste, Padre Tomaso: but why do you specially honour this species?"

"Don Carlos de Badajar," said the priest, with dignity; "I am but a poor priest, *un pobre heremito*, but poor priests do sometimes live to be cardinals. There was his late eminence, Cardinal Gonsalvo, of whom, doubtless, you have heard; he was once only a poor Dominican friar in the very convent of San Geronimo de Borja, where I spent many years. When I look at this bird, all clothed in black as he is, except his scarlet hat and hose, he raises my hopes, and I say, 'Who knows?'"

"Here comes the sea-breeze at last," said Gomez, as a cool air from the east rustled the foliage and swept over their sun-scorched faces. It increased, and presently sung in the topmost branches, and began to toss the broad fronds of the palma real, and to bend the tall yagrumos, as it swept across the plain.

The horsemen now emerged from the valley, and from a little eminence looked down on a scene of remarkable beauty. Before them was stretched an ample savanna, extending for many leagues, bounded on two sides by mountains, but in front terminating only at the horizon. Cultivated farms, fields smiling in the luxuriant verdure of waving sugar-cane, gardens of the broad-leaved plantain and banana, cottages surrounded by cocoa-nut palms and orange-groves, were scattered here and there; but the greater part consisted of rich grass, studded with many majestic trees, and divided by irregular narrow belts of forest. Cattle in groups were peacefully grazing, or ruminating beneath the shadowing trees; and through the midst of the landscape rolled the clear Iasse, like a ribbon of steel, save where it reflected the golden refulgence of the sun.

"Padre Tomaso," said Señor Gomez, "my neighbour Quevedo is collecting his tribute this week. I had thought of going with my young friend up the Pardave mountains, but what do you say to our turning down to Quevedo's hatte, and showing Don Carlos a macorning?"

"*Con mucho gusto, Señor*; but as to my poor self, I must beg his excellency to excuse me, for the distance is rather long for my mule with me upon her, who, as you see, am no feather. Besides, I think I see some *garzas* yonder up the river that I should very much like to have a pop at. So, if you please, I will take a shot or two in the savanna, and will expect the honour of your company to dinner as you return."

To this arrangement, unwilling as our friends were to lose the society of their agreeable companion, they could offer no impediment; and they parted, the priest with his dog and gun to the banks of the glistening Iasse, and the Señor and his guest to the hatero's farm several miles farther down.

Turning to the right as they broke from the valley, they pursued a road that led through the gloomy primeval forest at the mountain's foot. Gloomy it was, though a tropical sun, fast approaching the meridian, was pouring down his beams from an unclouded sky ; for so narrow was the path, so dense and tangled the forest on either side, and so lofty the trees, that not a ray of direct sunlight could penetrate to the ground through the foliage that met and intertwined a hundred feet above their head. And yet it was a delightful transition from the torrid heat of the savanna into this cool green-wood shade ; and the tender light that was shed by the sun-rays playing on the quivering leaves of the forest-roof, was most refreshing to the eye wearied with the glare of open day.

Though there was little of animal life, beast, bird, or insect, visible in these dark woods, there was a great deal to interest the intelligent stranger in the forms of the trees, and of their foliage ; in the many herbaceous plants that made the underwood ; in the lianes that hung and stretched rope-like from tree to tree ; in the fantastic parasite plants, often adorned with splendid flowers, that sprang from the trunks, or clustered on the branches ; and in a thousand other charms that vegetation presents in those teeming regions.

Don Carlos having complained of thirst, the planter peered carefully into the depths of the forest as he rode along, and in a few minutes he begged his companion to alight, and come with him a few steps. Then taking the machette, or hanger, from the negro, he seized a stout, rough vine that was depending in a loop from the bough of a tree, and with one blow of the cutlass severed it, bidding his companion apply one part to his mouth, while he did the same with the other. Half a pint of cold water, perfectly limpid and tasteless, flowed from each, and quenched their thirst.

"In order to understand what you are about to see," said Señor Gomez to his guest, "I must tell you that we *hateros*, that is, owners of cattle-breeding farms, are charged with a yearly tax or tribute, which is assessed according to the extent of the *hatte*. Of money we have little, and we therefore pay the tribute in cattle or horses, or whatever stock we raise, for the supply of the capital, St. Domingo. The *hatte* to which I am taking you rears horned cattle, but as we pass I may be able to show you a horse-hatte.

"We divide cattle here into four sorts, according to their habits ;—the domestic, which constantly graze around the dwelling-house ;—the gentle, or those which, though they rove in the pastures, will come at the sound of the herdsman's voice to be milked ;—the shy, which form herds on the savannas, each under the charge of an old bull, and which can only be driven and caught by men on horseback ;—and the wild, which roam the woods and mountain-fastnesses, and must be hunted and shot down. Those which are to be caught to-day are of the third class."

By this time the party had emerged from the forest, and were again on the open hill-side, with the wide savanna spreading for leagues beneath them. Again the course of the river was seen, but much increased in the volume of its waters by the accession of several tributary streams. In some places it was hidden by tangled thickets of black-withe and bushes of guayabo, completely covered with bright-blossomed creepers ; but in others, especially on the side nearest to the observers, the grassy meadows shelved smoothly down to the water's edge. The stream occasionally opened into silvery sheets of water ; and on the opposite side extended a broad morass covered with reeds, in which flocks of tall flamingoes with scarlet plumage were stalking, like companies of English soldiers, intermixed with white and grey herons. From the midst of this morass a grove of

fan-palms was growing, spreading their strange plaited leaves abroad, while the whole savanna was varied as before with trees of many kinds, with groves, and clumps, and thickets, and enamelled, like a garden, with flowers, the hues of which, softened and blended, could be seen even where the travellers stood. Immediately below them was the horse-farm of which the hatero had spoken. It was an extensive portion of the savanna, reaching down to the river, and bounded by a belt of woods on one side; the other boundary was not seen from this spot, though several square miles of the estate were visible. Horses were scattered about, not feeding singly, but gathered into herds, each of which was guarded by a stallion, usually conspicuous by his superior size and mien; and this order, as Gomez declared, was always observed; no horse or mare ever forsaking its own herd to join another; though terrible combats sometimes ensued between rival stallions, each desiring to embrace under his own sway his rival's dominion.

Half-an-hour's riding now brought them to Quevedo's *hatte*, which was separated from that of the horses only by the woods above mentioned. Here an animated scene was displayed; the cattle were in groups, but most of these were congregated in a distant quarter, each group huddling together, behind its bull-leader, who, with lowered head and deep muttered bellowings, was pawing the turf. In the foreground a number of horsemen were galloping about, chasing with wild cries the alarmed cattle, which were scampering, with loud lowings and stiffened tails, in all directions. At first it seemed a scene of meaningless confusion; but it was soon manifest that the horsemen were aiming at one special object, the separation of a particular beast from the herd, which they accomplished by heading it, as it sought to hide itself among its fellows, and by goading it with long lances.

Descending a little nearer to the scene of action, the Don was able, with the explanations of his guide, to see intelligently what took place. The majoral, attended by his pioneers, selected a comely young bullock, which he pointed out to the lancers. They, mounted on their thorough-bred steeds, immediately pricked it off, meeting it with shouts and cries in its doublings and attempts to escape. The steer was swift and courageous; sometimes, regardless of the outcries, and even of the lances, he dashed through his pursuers, with flanks streaming with blood, and rejoined his herd, whence, however, he was quickly severed again. At length one of the riders, spurring his horse close behind the bullock, suddenly leaped off and seized the animal's tail, twisting it round with great rapidity and force, until the poor beast, roaring with pain, fell on his knees. The man, at this instant, a stout muscular negro, jumped on the bullock's neck, and, with amazing dexterity, twisting its head round, forced the horns deep into the soft earth, where it lay almost helpless.

Meanwhile another ox, already caught and manacled, was led up by means of a cord to the prostrate beast, which was coupled to it with ropes of twisted thongs; then, being released, both were driven into a pen in one corner of the hatte, formed of logs of heavy timber. The pair of cattle so coupled the hatero called a *macorne*, and the process a *macorning*.

One bullock driven to desperation at length stood at bay; no longer seeking to escape, he made a fierce plunge at the nearest horseman, who evaded the assault only by the most cool courage, and by his perfect command of his horse. The bull instantly turned upon another; and for a few minutes he was the pursuer, and his foes the pursued. It was judged impossible to take him alive, at least without too great a waste of time and personal risk; and, therefore, one

of the boldest of the lancers awaited his desperate assault, and received the infuriated beast upon the point of his levelled lance, the weapon piercing deep into his left breast beneath the shoulder, and, as was presently found, cutting the heart in sunder. The poor animal fell over in an instant, and two men alighting cut its throat with their sharp knives, and immediately disembowelled it.

In the meantime another beast, which, though subdued, obstinately refused to move, was also slaughtered; and the two carcasses were quickly dragged by horses to the bank of the river. Here each was flayed with great expedition; and while some of the men were engaged in cutting up the beef into quarters, which was neatly and skilfully done, others proceeded to make the fresh hides into impromptu boats. They first cut two stout stakes from some tough-wooded tree, with their heavy knives, and binding them in the form of a cross with thongs of the raw hide, proceeded to stretch the skin over the cross, gathering the sides together with similar thongs. Thus two square receptacles were soon formed, which being carefully launched on the surface of the river, were held by some, while others steadily stowed the beef in the concavity, beneath the cross-stakes. It was a ticklish boat, certainly, and the slightest carelessness would have swamped it; but the negroes worked with the rapidity, precision, and nonchalance of men well used to the contrivance, and the stowing of the meat was effected without any mischance. As soon as both boats were loaded, one man took charge of each, floating them down the mirror-like river on their way to St. Domingo.

Picturesque was the whole scene, and fully appreciated by the young Spaniard, as he rode to and fro with interested curiosity. The boatmen prepared themselves for their mission by stripping off the camisa of pink and white check, which they had worn, and binding it like a turban around

the head, leaving only the tanga, or waistcloth, around the body ; that they might be more unincumbered in the alternate swimming and wading which now devolved upon them. Then in they plunged, each pushing his frail bark before him as he swam down the stream, till hidden from view by the intervening thickets of inga and acacia, festooned with convolvulus. The smooth face of the river, especially in the broad pools and bays, was embellished with large white water-lilies, each sitting like an Eastern sultana upon its carpet of floating leaves, which rose and sank on the wavelets raised by the strokes of the swimmers. The swift water-tortoise was seen shooting along in the clear depths ; and the grinning jaws and uncouth head of a crocodile suddenly projected from the opposite reeds, but instantly disappeared, as the huge reptile took cognisance of the noisy throng. ☉

L'ENVOI

TO "THE NUN'S CONFESSION."

THE child invents a playmate's voice,
 And, busied all alone,
 Will fashion questions and replies
 In quaintly varying tone :
 So while the poet sings, he still
 Makes listeners of his own.

The tale has wept itself to sleep :—
 Methinks some turn aside

Disheartened that the lonely voice
 Abrupt, unanswered, died ;
 That those sad arms stretched up to Heaven
 Sank down unsatisfied.

And Fancy to a brighter close
 Would fain the notes prolong :
 She strives to snatch the lyre from Truth,
 She fain would right the Wrong ;
 But though her strength be angel-strength,—
 The Truth is yet more strong.

Across the seas, stormy and dark,
 Mastering the loud wind's roar,
 One last long cry of wild despair
 Has reached us on the shore ;
 But from the crowded raft rise up,
 Unheard, a thousand more.

Let not our nice fastidious ears
 Reject the jarring sound ;
 To Heaven it rises, and from thence
 The answer will be found :
 Sooner or later Abel's blood
 Cries from the conscious ground.

The steps of an avenging Power
 Are ever shod with wool,*
 Till the last moment all unheard :
 But, when the times are full,
 Where shall they flee who stood between
 Christ and the sinner's soul ?

F. A. P.

* *Dii laneos habent pedes.*

THE ORMER-SHELL OF THE CHANNEL ISLES.

ON the shores of the verdant Southern Isles, and on the rocky coast of California, a genus of shells is found, resembling a good deal the shape of the human ear, and named from that circumstance *Haliotis*,* or Sea-ear. The species from New Zealand, in large specimens, measures six inches in length and five in diameter, is deeply concave internally, and somewhat roundedly oval in shape. The outer surface is of a rufous grey colour, while the internal nacreous face is of a beautiful azure blue, bespangled with a lively iridescence. The Californian shell measures eight inches in length and six in diameter, and is slightly flatter and more oval in form. As might be conjectured, from its native habitation, it is rough and rather coarse externally. Its outer coat is of a red colour, but internally it is gorgeous with green, red, and gold, and its iridescence is splendid. From its flavour the natives of New Zealand call the animal of their shell the *mutton-fish*, and find it a wholesome article of food.

Many other species of rare beauty and elegance occur in various other parts of the world, and one species extends its range to within a short distance of our own sea-girt isle. A stranger from England, setting his foot for the first time on the pretty island of Jersey, or on the interesting shores of Guernsey, and walking down to the beach at the low equinoctial spring-tides, when the rocks are to a great extent laid bare, will perhaps be surprised to find a shell there which he never saw on his own coasts at home. The largest limpet, of which there are myriads, and of a goodly size, adhering to these craggy rocks, dwindles into insignificance compared with it; the sombre grey conical *Patella* contrasts

* *ἁλίου*, of the sea; *οὐτίς*, *ὠτὸς*, an ear.

but poorly with the sparkling and elegant *Haliotis*, while the opaque and dull interior of the one cannot for a moment be compared with the lustrous polish and the rainbow-like lining of the other. The occupant, too, of the ear-shell, though considerably resembling the limpet, is a much more beautiful creature. It is variously tinted with brown, green, white, and salmon colour, and along the sides of the body is a series of lobes, green tipped with white, and thickly fringed with short cirrhi, which, when the animal is seen alive, wave to and fro with a graceful undulatory motion. The shell itself in adult specimens measures from three to four and a quarter inches in breadth, and from two to three across from side to side. In form it very much resembles the human ear, and it has received from the natives of the Channel Isles the name of *Ormer*, a corruption of the French "*Oreille de Mer*." It is rather flattened in shape, and of an oval contour. The external surface is wrinkled and striated, and generally coloured of a reddish brown tint, mixed with blue and mottled with white. The internal surface is lined with a soft and silvery nacre, which is beautifully iridescent. The spire of the shell, for though flat it has a spire, is very small, and placed, as it were, on one side; and along the left edge of the shell there runs a ridge perforated with small holes, which have a prominent margin, and become filled up and flattened near the spire as the shell increases in size.

These handsome molluscs are inhabitants of the very verge of the littoral zone, living near and under rocks and stones. They were formerly much prized as an article of food; and the older inhabitants of Guernsey inform us, that when well beaten and properly cooked, they are exceedingly good eating,—tasting like veal cutlets. Of late years, however, they have fallen into disuse; and it is not easy to find a cook who knows how "to do them to a turn." Twenty years ago the empty shells were thrown out on the beach in

basketfuls, after the animals had been eaten, and they might be picked up as plentifully on the sand as empty oyster-shells elsewhere. Since the great increase, however, of the manufacture of *papier-maché* work, in which mother-of-pearl is employed, these shells are seldom to be seen. Great quantities are sent yearly to the manufactories of Birmingham; and the little Guernsey children now know the value of the Ormer, and pick up every specimen. During the summer months a person may wander along the shores for miles and not see a single shell. But guided by an instinct which is not quite understood, the animals make periodical visits to the shores, where they cling to the rocks visible at low water, or hide under the stones; and after a short sojourn, they retire, and creep back to deeper water. It is generally about the time of the very low tides of March or April that they are to be met with in the greatest abundance, and large quantities are then caught by the parties who go out to collect the *vraic*, or seaweed, for their manure and firing.

A small bay in Guernsey, called Cobo Bay, lying on the north side of the island, is a favourite resort of these molluscs. To Cobo Bay, from St. Peter's Port, is a pretty walk of nearly three miles. Skirting the foot of the hill on which Catel Church is built, passing neat cottages with their pretty flower-gardens, where myrtles and orange-trees thrive well, and where the jasmine and vine cover the sides of the house with their elegant foliage, and where wild flowers of great beauty are met with at every step, the pedestrian at length emerges upon a low sandy bay. Close up to high-water mark is fine sand, but farther out huge rocks extend into the sea, some in the form of a serrated ridge, covered with seaweed, others rising high and bare into lofty spires and pinnacles. Woe to the luckless mariner whose storm-tossed barque is stranded on that rough and

rocky shore! Certain destruction awaits him. In Catel churchyard a simple and rather rudely-sculptured monument is seen erected to commemorate such an event, which a few years ago befell an unfortunate vessel with cargo and passengers from the Havanah. Dashed against the rocks which form one side of the bay, it was speedily broken in pieces, and every soul but one found a watery grave. Since the great increase of steam-vessels, shipwrecks have become comparatively rare; but the writer was told by a lady who lived for years near that coast, that the sullen boom of the gun, giving the signal of a ship ashore or in imminent danger, was of such frequent occurrence, and the knowledge that no human aid could be of any avail so painfully certain, that they ceased to be disturbed by its roar; and breathing a prayer for the unfortunate mariners, they remained at rest till morning's dawn should unfold to them what the storm of the night had done. It is amongst these rocks, however, and far out, at low water, that the Ormer dwells; and a stroll in a fine day, when the sea is calm, scrambling amongst the seaweed, and leaping over the pools where the beautiful actinæ are to be seen with their lovely tinted tentacles, is a treat of no ordinary nature. The islands of Jersey and Guernsey abound in beautiful bays and little harbours, where the naturalist and lover of fine scenery may indulge their tastes to their hearts' content. The inhabitants are exceedingly civil and polite, the walks varied and full of interest, and the climate mild and salubrious. A summer month may be spent most delightfully on these quiet shores; and a visit to the curious and romantic-looking little island of Serk would alone repay the *désagrémens* of the voyage from Southampton to Newhaven.

W. B.

BRITISH MINING.

COAL.

AMONGST the numerous phenomena, registering the earth's mutations, which have been developed to man, by the aid of geological science, none possess greater interest, or afford more subjects for contemplation, than those connected with the extensive coal-formations of Great Britain.

If we cast our eyes over a geological map of our island, we find sundry black patches of colour indicating the localities in which coal is found. First, there is the Scotch coal-field extending from sea to sea, embracing Edinburgh and Glasgow; then the valuable district of Northumberland and Durham, followed by the extensive coal-fields of the West Riding of Yorkshire and the equally important ones of Lancashire and Staffordshire. Smaller patches are seen scattered through Leicester and the counties westward. Glamorganshire presents an extensive coal district—and in Pembrokeshire we have another—producing a coal known as anthracite. With the Forest of Dean and the Bristol coal-field in Gloucestershire, the coal-formations terminate southward. These form a total area of 4068 square miles, and include at least 3000 working collieries. The coal-fields of Ireland embrace areas equal to 2227 square miles; but these are not developed with the same amount of industry and skill as those of England and Scotland.

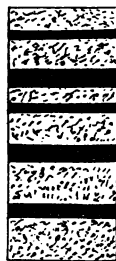
Coal occurs in *beds*—these should be especially distinguished from the *veins* or *lodes* in which the metalliferous deposits are formed. Generally the coal-formations give

evidence of their having been produced in a nearly horizontal position. This has, not unfrequently, been altered considerably by movements subsequently to the deposition of the matter forming the coal, and therefore now in many of our mines the workings on the coal-beds are at a high inclination.

If the reader will imagine an immense lake, or a large delta, in which a series of deposits, differing in their character, has been formed, a section of these will give the appearances which present themselves in a section of our coal-measures. To adopt a yet more simple illustration: clay and coal-dust, we will suppose, are thoroughly diffused through the water contained in a deep vessel. According to the laws of gravity, the clay will subside first, and then the lighter coal-dust, leaving the water eventually clear. More clay and coal-dust are mixed with the water; we shall then have another deposit similar to the first, and this we may repeat any number of times. Our deposited mass would at last present a section such as that shown in the adjoining figure, the thicknesses of the bands of coal and clay depending upon the quantities of each held in suspension by the water.

This is merely an indication of the conditions of *bedding*, and is not to be considered as an explanation of the actual formation of coal. Chemical analysis and microscopical examination equally prove the vegetable origin of coal.

Many coal-beds clearly indicate that the plants from which they are formed grew and died upon the spot where the coal is now found, whereas others as evidently appear to show that the vegetable matter has been brought from some distant locality. In some the condition of absolute



rest is shown, while in others an unmistakable disturbance is evident. The former of these conditions indicate a vast swamp upon which plants grew, died, and sunk—the latter, the drifting of matter into a large delta, such as that of the Mississippi or the Niger, in which analogous formations to those of our coal-beds are now going on. Indeed, in some of the low valleys on the banks of the great American river we have all the conditions, on a comparatively small scale, regularly accruing, which appear to have prevailed during the formation of our coal-fields. In these large swamps the progress of vegetation is exceedingly rapid; and for a period of five, eight, or ten years, plants are rapidly growing, and being of a succulent nature, they quickly decay. The great floods of the Mississippi occur with considerable regularity, and the vegetation of these swamps being then overflowed, and the torrents from the mountains bringing down immense quantities of detrital matter, it is entirely buried. The flood subsides, the soft vegetable matter sinks under the pressure, and on the new surface of mud a young vegetation commences and rapidly extends itself over the space, and increases in size. This occurring again and again, gives rise to the formation of bands of vegetable matter, and of sand or clay, such as those already described. In the peat-bogs of Ireland we have also conditions analogous to those which probably prevailed when our coal was forming. Chemical analysis and microscopic examination equally prove that coal is of vegetable origin. In many varieties of coal the vegetable structure is evident throughout the mass; in others it is nearly obliterated by the changes to which the mass has been subjected. The whole process of the formation of a coal-bed has been so carefully described by the graphic pen of Hugh Miller, that we make no excuse for introducing words which cannot, for their power of picture-painting, be excelled. We see—

"A low shore thickly covered with vegetation. Huge trees, of wonderful form, stand out far into the water. There seems no intervening beach. A thick ledge of reeds, tall as the masts of pinnaces, runs along the deeper bays, like water-flags at the edge of a lake. A river of vast volume comes rolling from the interior, darkening the water for leagues with its slime and mud, and bearing with it to the open sea reeds and fern and cones of the pine, and immense floats of leaves, and now and then some bulky tree, undermined and uprooted by the torrent. We near the coast, and now enter the opening of the stream. A scarce penetrable phalanx of reeds, that attain to the height, and well-nigh the bulk, of forest-trees, is ranged on either hand. The bright and glossy stems seem rodded like Gothic columns, the pointed leaves stand out green from every joint, tier above tier, each tier resembling a coronal wreath or an ancient crown, with the rays turned outwards, and we see a-top what may be either large spikes or catkins.

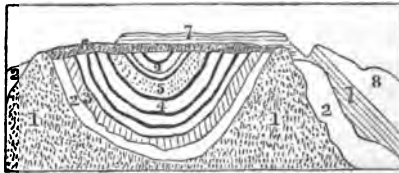
"What strange forms of vegetable life appear in the forest behind ! Can that be a club-moss that rises its slender height for more than fifty feet from the soil ? or can these tall, palm-like trees be actually ferns, and these spreading branches mere fronds ? And, then, these gigantic reeds ! Are they not mere varieties of the common horse-tail of our bogs and morasses, magnified some sixty or a hundred times ? Have we arrived at some such country as the continent visited by Gulliver, in which he found thickets of weeds and grass tall as woods of twenty years' growth, and lost himself amid a forest of corn fifty feet in height ? The lesser vegetation of our own country, its reeds, mosses, and ferns, seem here as if viewed through a microscope : the dwarfs have sprung up into giants, and yet there appears to be no proportional increase in size among what are unequivocally its trees. Yonder is a group of what seem to be pines—tall and bulky, it is true, but neither taller nor bulkier than the pines of Norway and America ; and the club-moss behind shoots up its green, hairy arms, loaded with what seem catkins above their topmost cones.

"But what monster of the vegetable world comes floating down the stream, now circling round in the eddies, now dancing on the ripple, now shooting down the rapid ? It resembles a gigantic star-fish, or an immense coach-wheel divested of the rim. There is a green dome-like mass in the centre, that corresponds to the nave of the wheel, or the body of the star-fish ; and the boughs shoot out horizontally on every side, like spokes from the nave, or rays from the central body. The diameter considerably exceeds forty feet ; the branches, originally of a deep green, are

assuming the golden tinge of decay; the cylindrical and hollow leaves stand out thick on every side, like prickles of the wild-rose on the red, fleshy lance-like shoots of a year's growth, that will be covered two years hence with flowers and fruit. That strangely-formed organism presents no existing type among all the numerous families of the vegetable kingdom.

"There is an amazing luxuriance of growth all around us. Scarce can the current make way through the thickets of aquatic plants that rise thick from the muddy bottom; and though the sunshine falls bright on the upper boughs of the tangled forest beyond, not a ray penetrates the more than twilight gloom that broods over the marshy platform below. The rank steam of decaying vegetation forms a thick blue haze, that partially obscures the underwood. Deadly lakes of carbonic acid gas have accumulated in the hollows, there is a silence all around, uninterrupted save by the sudden splash of some reptile fish that has risen to the surface in pursuit of its prey, or when a sudden breeze stirs the hot air, and shakes the fronds of the giant ferns, or the catkins of the reeds. The wide continent before us is a continent devoid of animal life, save that its pools and rivers abound in fish and mollusca, and that millions and tens of millions of the infusory tribes swarm in the bogs and marshes. Here and there, too, an insect of strange form flutters among the leaves. It is more than probable that no creature furnished with lungs of the more perfect construction could have breathed the atmosphere of this early period and lived."

Exceptions may be taken to the views regarding the existence of animal life at this period, but this is a discussion into which it would not be convenient to enter in the present paper. The conditions which are so beautifully described by the author of "The Old Red Sandstone" will render intelligible the annexed diagram:—1 is the old red sandstone formations, which exist below the coal-measures.



Upon this extensive series of rocks we have the deposit of

the mountain limestone (2). Subsequently to this a coarse sandstone formation occurs, known as the millstone grit (3); and above this we have the coal-seams (4) occurring with their beds of under-clay. The pennant, a coarse sandstone formation (5), occurs above the coal; then we find, in succession, the new red sandstone, or red marl (6), the lias limestone (7), so called from its being deposited in *layers*, and above these occur the oolites (8). Such are the *general* conditions of a coal-field, although it should be remembered that there are peculiar exceptions to this order.

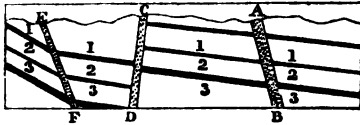
These formations are not unfrequently very much disturbed. Often we have evidence of uplifting of large districts, and of the subsequent denudation of the surfaces of the hills so formed.



The accompanying woodcut represents an elevation of limestone strata (L), in consequence of which

the coal-measures (C C) are thrown from their original positions into an arrangement nearly vertical. In all probability, this has been effected by some large mass of igneous rock, at no very great distance below the surface. Supposing the beds of coal to have been originally in a horizontal plane, or nearly so, they would have passed over the limestone; but since we find them *out-cropping*, or appearing on the surface, on either side of the limestone, we may fairly infer that a large mass of matter has been removed by denudation since the uplifting of the mass.

In some cases we have the coal-beds dislocated by *slips* or *dykes*. Sometimes we have these merely passing through



the coal-beds, as A B in the accompanying section, altering scarcely at all the direction of the strata. C D, however,

and *E F*, are the result of a considerable subsidence of the mass of ground constituting the coal-measures, and the same motion also alters the beds on the left-hand side of the section. These *slips* are analogous in their character to the *faults* already described in the papers on metalliferous mines. In both cases they are indications of great movements of the earth's crust. Frequently in the coal-fields the position of the coal-beds is so altered, that considerable cost becomes necessary before the bed can be rediscovered, and sometimes the dislocation and subsidence of the coal have been so great that it is entirely lost.

Having sketched out the mode of occurrence of the coal, we shall in another paper describe the methods employed for developing this important element of our national wealth.

R. H.

SUNSHINE AND SHADOW.

THE lark soars upward to greet the day,
Singing cheerily ;
In the sunshine the village children play,
Laughing merrily ;
But my heart responds not to sounds so gay,
For the shadow of sorrow lies dark on my way,
And sadly o'er life's rough path I stray,
Plodding wearily.

The fields with green 'neath vernal showers
Refresh the sight ;
And the tints of the rainbow are seen in the flowers,
Varied and bright ;
But o'er many a path in this world of ours
Heavy and threat'ning the storm-cloud lowers,
And the dial marks in shadow the hours,
Even in the sunlight.

Yet ever to us,—with the dial's aid,—
Is a lesson given ;
Measuring each step of its progress in shade
With the light of heaven.
Too often with sullen distrust surveyed,
Or with dark ingratitude repaid,
Are those gifts in mercy to us conveyed ;
Thus we cause life's flowers by our path to fade,
And the heart is riven.

As the lark soars upward with eager wing
From the grassy sod ;
And the flowers draw scent and hue as they spring
From the earthy clod ;
May earnest faith look heavenward still,
Deriving good from seeming ill,
Striving life's mission to fulfil,
Trusting in God.

B. L.

1-2-3



Arctic Fox. (Canis Lagopus.)

ARCTIC FOX.

(*Vulpes lagopus.*)

THIS inoffensive and pretty little creature is found in all parts of the Arctic lands. Its fur is peculiarly fine and thick ; and as in winter this is closer and more mixed with wool than it is in summer, the intense cold of these regions is easily resisted. When sleeping rolled up into a ball, with the black muzzle buried in the long hairs of the tail, there is not a portion of the body but what is protected from the cold, the shaggy hairs of the brush acting as a respirator or boa for the mouth, and a muff for the paws. Our Arctic travellers have remarked, that it is a peculiarly cleanly animal, and its vigilance is extreme. It is almost impossible to come on it unawares, for even when appearing to be soundly asleep, it opens its eyes on the slightest noise being made. During the day it appears to be listless, but no sooner has the night set in than it is in motion, and it continues very active until morning. The young migrate to the southward in the autumn, and sometimes collect in great numbers on the shores of Hudson's Bay. Mr. Graham noticed that they came there in November and left in April.

Sir James Ross found a fox's burrow on the sandy margin of a lake in the month of July. It had several passages, each opening into a common cell, beyond which was an inner nest, in which the young, six in number, were found. These had the dusky, lead-coloured livery worn by the parents in summer ; and though four of them were kept alive till the following winter, they never acquired the pure white coats of the old fox, but retained the dusky colour on the face and sides of the body. The parents had

kept a good larder for their progeny, as the outer cell and the several passages leading to it contained many lemmings and ermines, and the bones of fish, ducks, and hares, in great quantities. Sir John Richardson* observed them to live in villages, twenty or thirty burrows being constructed close to each other. A pair were kept by Sir James Ross for the express purpose of watching the changes which take place in the colour of their fur. He noticed that they threw off their winter dress during the first week in June, and that this change took place a few days earlier in the female than in the male. About the end of September the brown fur of the summer gradually became of an ash colour, and by the middle of October it was perfectly white. It continued to increase in thickness until the end of November.† A variety of a blackish brown colour is occasionally met with, but this is rare: such specimens, Ross remarks, must have extreme difficulty in surprising their prey in a country whose surface is of an unvaried white, and must also be much more exposed to the persecutions of their enemies. The food of this fox is various, but seems to consist principally of lemmings and of birds and their eggs. He eats, too, the berries of the *Empetrum nigrum*, a plant common on our own hills, and goes to the shore for mussels and other shell-fish. Otho Fabricius‡ says he catches the Arctic salmon as that fish approaches the shore to spawn, and that he seizes too the haddock, having enticed it near by beating the water. Crantz, in his "History of Greenland," evidently alludes to this cunning habit when he observes, "They plash with their feet in the water, to excite the curiosity of some kinds of fishes to come and see what is going forward, and then they snap them up ; and the Greenland women have learnt

* "Fauna Boreali-Americana." Mammalia, p. 87.

† Appendix to "Second Voyage," p. xii.

‡ "Fauna Groenlandica," p. 20.

this piece of art from them." Captain Lyon noticed a fox prowling on a hill-side, and heard him for some hours afterwards in the neighbourhood imitating the cry of the brent-goose. In another part of his Journal he mentions that the bark is so modulated as to give an idea that it proceeds from a distance, though at the time the fox lies at your feet. It struck him that the creature was gifted "with this kind of ventriloquism in order to deceive its prey as to the distance it is from them." It sometimes catches the ptarmigan; and though it cannot swim, it manages occasionally to get hold of oceanic birds; in fact, nothing alive which it can master seems to come amiss, and failing to make a meal from something it has caught and killed, the Arctic fox is glad, like foxes in more favoured lands, to feed on carrion.

Martens, in his "Spitzbergen," says, that some of the ship's crew informed him, that the fox when he is hungry "lies down as if he was dead, until the birds fly to him to eat him, which by that trick he catches and eats." Our author believed it a fable, but it may nevertheless be one of the many expedients used by a species of a group whose name is proverbial for craftiness and cunning.

The flesh of the fox is occasionally eaten by the Esquimaux: Captain Lyon, in his "Private Journal," says that at first all of his party were horrified at the idea of eating foxes, "But very many soon got the better of their fastidiousness and found them good eating; not being myself very nice, I soon made the experiment, and found the flesh much resembling that of kid, and afterwards frequently had a supper of it."

Sir James Clarke Ross, during his five years' imprisonment in Boothia Felix and the adjoining seas, had ample means of judging of its flavour; he tells us that some of his party, who were the first to taste them, named them "lambs," from their resemblance in flavour to very young lamb. He

adds, that the flesh of the old fox is by no means so palatable. During that disastrous expedition the flesh of this fox formed one of the principal luxuries of their table, and it was always "reserved for holidays and great occasions. We ate them boiled, or, more frequently after being parboiled, *roasted*, in a pitch kettle."

When the Arctic Expedition in search of Franklin wintered in Leopold Harbour in 1848-49, the commander, Sir J. C. Ross, made use of the Arctic fox as a messenger. Having caught some of these animals in traps, a collar with information for the missing parties was put round the neck of each before liberation, as the fox is known to travel great distances in search of food. On Captain Austin's subsequent expedition in 1850-51 the same plan was carried out, but it was found to be equally without result. Commander Osborn thus facetiously describes the circumstance,* "Several animals thus intrusted with despatches or records were liberated by different ships ; but, as the truth must be told, I fear in many cases the next night saw the poor 'postman,' as Jack termed him, in another trap, out of which he would be taken, killed, the skin taken off and packed away to ornament at some future day the neck of some fair Dulcinea. As a 'sub,' I was admitted into this secret mystery, or, otherwise, I with others might have accounted for the disappearance of the collared foxes by believing them busy on their honourable mission. In order that the crime of killing 'the postmen' may be recognised in its true light, it is but fair that I should say, that the brutes, having partaken once of the good cheer on board or around the ships, seldom seemed satisfied with the mere empty honours of a copper collar, and returned to be caught over and over again. Strict laws were laid down for their safety, such as that no fox taken alive in a trap was to be killed : of course no fox

* "Stray Leaves from an Arctic Journal," p. 176.

was after this taken alive ; they were all unaccountably dead, unless it was some fortunate wight whose brush and coat were worthless ; in such case he lived either to drag about a quantity of information in a copper collar for the rest of his days, or else to die a slow death, as being intended for Lord Derby's menagerie. The departure of 'a postman' was a scene of no small merriment ; all hands, from the captain to the cook, were out to chase the fox, who, half frightened out of its wits, seemed to doubt which way to run, whilst loud shouts and roars of laughter, breaking the cold, frosty air, were heard from ship to ship, as the fox-hunters, swelled in numbers from all sides, and those that could not run mounted some neighbouring hummock of ice and gave a loud halloo, which said far more for robust health than for tuneful melody."

The Arctic fox as a captive has often amused our Arctic voyagers, and accounts of it are to be met with in most of their narratives. Captain Lyon made a pet of one he captured, and confined it on deck in a small kennel with a piece of chain. The little creature astonished the party very much by his extraordinary sagacity, for, on the very first day, having been repeatedly drawn out by his chain, he at length drew his chain in after him whenever he retreated to his hut, and took it in with his mouth so completely, that no one who valued his fingers would venture afterwards to take hold of the end attached to the staple.

(Sir J. C. Ross in Boothia Felix observed a good deal of difference in the disposition of specimens, some being easily tamed, whilst others would remain savage and untractable even with the kindest treatment. He found the females much more vicious than the males. A dog-fox which his party captured, lived several months with them, and became so tame in a short time that he regularly attended the dinner-table like a dog, and was always allowed to go at

large about the cabin. When newly caught their rage is quite ungovernable, and yet when two are put together they very seldom quarrel. They soon get reconciled to confinement. Captain Lyon* notices that their first impulse on getting food is to hide it as soon as possible, and this, he observed, they did, even when hungry and by themselves; when there was snow on the ground they piled it over their stores and pressed it down forcibly with their nose. When no snow was to be obtained, he noticed his pet fox gather the chain into his mouth, and then carefully coil it so as to cover the meat. Having gone through this process and drawn away his chain after him on moving away, he has sometimes repeated his useless labours five or six times, until disgusted, apparently, at the inability of making the morsel a greater luxury by previous concealment, he has been forced to eat it. These creatures use snow as a substitute for water, and it is pleasing to see them break a large lump with their feet, and roll on the pieces with evident delight. When the snow lay lightly scattered on the decks, they did not lick it up as dogs do, but by pressing it repeatedly with their nose, collected a small lump which they drew into their mouth.

It may be added that the specific name *lagopus*, or "hare-foot," was given to this fox from the soles of its feet being densely covered with woolly hair, which gives them some resemblance to the feet of a hare. Cuvier remarks that other foxes acquire this hair on the soles when taken to northern lands.

The specimens, figured so admirably by Mr. Wolf, were drawn from some brought alive to the Zoological Gardens by one of the late Arctic expeditions. A. W.

* "Private Journal," p. 105.

THE FABLES OF PILPAY.

THE Fables of the Brahmin, Bidpai, or Pilpay, as he is called by Europeans, are the most ancient apologues in the world. They were first translated from the Sanskrit in the reign of the great Kasra Núshírwán, of Persia (our Chosroes), the contemporary of Justin and Justinian. Gibbon gives the following account of the first Persian version of the Fables:—"In the search of universal knowledge, Nushirvan was informed that the moral and political fables of Pilpay, an ancient Brahmin, were preserved with jealous reverence among the treasures of the kings of India. The physician, Perozes, was secretly despatched to the banks of the Ganges, with instructions to procure, at any price, the communication of this valuable work. His dexterity obtained a transcript, his learned diligence accomplished the translation, and the Fables of Pilpay were read and admired in the assembly of Nushirvan and his nobles. The Indian original and the Persian copy have long since disappeared; but this venerable monument has been saved by the curiosity of the Arabian caliphs, revived in the modern Persic, the Turkish, the Syriac, the Hebrew, and the Greek idioms, and transfused through successive versions into the modern languages of Europe." Sir William Jones, in one of his discourses to the Royal Asiatic Society, says, that "they are extant under various names, in more than twenty languages." The Baron Silvestre de Sacy has since devoted much research to the literary history of the work, and has written a learned treatise on all the known translations, both Oriental and European. The most important version, and that through which the treasures of ancient Indian wisdom are best known among Western nations, is that of the Persian, Husain Vaiz, written about the year A.D. 1105,

at the command of Abul Ghazi, a descendant of the great Tamerlane. Husain Vaiz entirely remodelled the work, as known in his time under the title of the Book of Kalilah and Damnah. He took the old Sanskrit stories as his text, but he added much matter of his own, and illustrated the narrative and tales by quotations from the Koran, and verses from the Persian poets, to suit the taste of his contemporaries. Gibbon says, with some truth, that, "in their present form, the peculiar character, the manners and religion of the Hindoos, are completely obliterated;" but few will agree with him, except in so far as style is concerned, when he adds, that "the intrinsic merit of the Fables of Pilpay is far inferior to the concise elegance of Phædrus and the native graces of La Fontaine." The estimate of Sir William Jones, a better authority, is very different. In the preface to his Persian Grammar he says, "The most excellent book in the language is, in my opinion, the collection of tales and fables called 'Anvár-i Suhailí,' by Husain Vaiz, surnamed Kashifi, who took the celebrated work of Bidpay, or Pilpay, for his text, and has comprised all the wisdom of the Eastern nations in fourteen beautiful chapters." The meaning of the title, Anvar-i Suhaili is "the Lights of Canopus," the name of that star being flatteringly applied to the royal patron of Husain Vaiz. Of some portions of the Anvar-i Suhaili various versions have appeared, but a complete translation in English has lately, for the first time, been made by Professor Eastwick of Heyleybury College.* Candidates for East India interpreterships are required to read the Anvar-i Suhaili of Husain Vaiz after the Gulistan of Saadi. To furnish an aid for this study has been Professor Eastwick's chief aim in his translation,

* Anvar-i Suhaili, or the Lights of Canopus, being the Persian Version of the Fables of Pilpay. Translated from the Persian of Husain Vaiz, by Edward B. Eastwick, F.R.S. Stephen Austin, Hertford.

which is, therefore, as closely literal as possible. "Those characteristics of style," says Professor Eastwick, "which form the chiefest beauties of the work in the eye of Persian taste, will appear to the European reader as ridiculous blemishes. The undeviating equipoise of bi-propositional sentences, and oftentimes their length and intricacy; the hyperbole and sameness of metaphor, and the rudeness and unskilfulness of the plots of some of the stories, cannot but be wearisome and repulsive to the better and simpler judgment of the West. Kings always sit on thrones stable as the firmament, rub the stars with their heads, have all other kings to serve them, and are most just, wise, valiant, and beneficent. Ministers are invariably gifted with intellects which adorn the whole world, and are so sagacious that they can unravel all difficulties with a single thought. Mountains constantly vie with the sun in height, all gardens are the envy of Paradise, and every constellation in heaven is scared away in turn by some furious tiger or lion upon earth. These absurdities are so prominent that they would probably induce the generality of readers to close the book in disgust." The patient reader will, nevertheless, be rewarded with the discovery of many beautiful thoughts and brilliant fancies. We give three of the fables.

THE FLIES AND THE JAR OF HONEY.

A pious Dervish was one day passing along the Bázár. A poor man, a confectioner, who had a fellow-feeling for the indigent, asked the holy man to rest at his door. The Dervish, to gratify him, took his seat there; and the master of the shop, by way of imploring a blessing, filled a cup with honey and set it beside the stranger. The Flies, according to their custom of rushing upon sweet things, all at once settled in swarms on the cup of honey. Some alighted on the side of the cup, and a few threw themselves into it. The Confectioner, seeing that the attacks of the flies went beyond all bounds, flourished a fan to drive them away. Those that were at the side of the cup easily took wing, and went off; but the feet of those who had seated themselves within having stuck in the honey,

when they tried to fly, their wings became clogged, and they fell into the snare of destruction.

Then was the pious Dervish greatly amused, and he began to utter cries of delight. After his mind grew calm, and the waves of the ocean of his ecstasy had settled, the Confectioner said to him, "Oh, holy man! I have not withheld from thee material sweetmeats: do not, then, withhold from me that spiritual matter that was disclosed in thy recent transports." The Dervish replied, "In this cup of honey I saw the vile world, and the greedy and covetous competitors for it; and a secret and inspired voice said to me, 'Know that this cup is the world, and this honey its dainties, and these flies those that pursue them. And they that sit on the side are the contented who are satisfied with a small portion from the table of the world; and the others, which are inside the cup, are the greedy and covetous, who fancy that, as they are inside, they will get the greater share. However, when Isráil waves the fan of departure, those that are on the side easily fly away, and return to their nest in the assembly of the wise, while those that are seated inside, the more they struggle, get their feet the deeper entangled, and the issue of their affairs terminates in eternal misery and ruin.'"

THE MOUSE AND THE FROG.

A Mouse had taken up his abode at the foot of a tree which grew on the brink of a pool. A Frog had his residence close at hand, passing his time in the water, and sometimes coming to the margin of the pool to take the air. Meeting often, the two became acquainted, and from words of courtesy, there grew feelings of friendship. In short, being mutually pleased with each other, they became inseparable companions, and used to narrate to each other the whole story of their lives. One day the Mouse said to the Frog, "I am oftentimes desirous of disclosing to thee a secret, and recounting to thee a grief, which I have at heart, or imparting to thee a pleasure that I feel, but at that moment thou art abiding under the water. However much I call to thee, thou hearest not, owing to the noise of the water or the clamour of the other frogs. We must devise some artifice by which thou mayest know when I come to the brink of the water, and thou mayest be informed of my arrival without my shouting to thee." The Frog said, "Thou speakest truly. I, too, have often pondered uneasily, thinking, should my friend come to the brink of the water how shall I at the bottom learn his arrival? And how absolve myself of the anxiety which he will be enduring to gain sight of me? As it sometimes happens that I, too, come to the mouth of thy hole, and thou hast gone out from another side, and I have to wait long, I had

intended to have touched on this subject to thee; but thou thyself, with the kindness thou possessest, hast set forth the circumstance, and with candour of heart hast made known the hidden feelings of my mind. Now the arrangement of this matter rests with thee." The Mouse replied, "I have got hold of the thread of a plan. It appears to me the best thing is to get hold of a long string, and to fasten one end to thy foot. and tie the other tight round my own, in order that when I come to the water's edge and shake the string thou mayest know what I want; and if thou, too, art so kind as to come to the door of my cell, I may also get information of this by your jerking the string." Both parties agreed to this, and the knot of friendship was in this manner firmly secured, and they were also kept informed of one another's condition. One day the Mouse came to the water's edge to seek the Frog, in order to renew their friendly converse. At that moment, a Crow flew down from the air, and, snatching up the Mouse, soared up with him. The string which was tied to the leg of the Mouse drew forth the Frog from the bottom of the water, and as the other end was fastened to the Frog's leg, he was suspended head downwards in the air. The Crow flew on, holding the Mouse in his beak, and lower down the Frog hanging head downwards. People beholding that extraordinary sight were uttering in the road jokes and sarcasms. "A strange thing this, that, contrary to his nature, a crow has made prey of a frog;" and "Never before was a frog the prey of a crow." The Frog was howling out in reply, "Now, too, a frog is not the prey of a crow; but from the bad luck of associating with a mouse, I have been caught in this calamity; and he who associates with those of a different species deserves a similar fate."

Beware of being led, through interchange of social courtesies, to become foot-bound in the snare of an unwise friendship. There are many whom it is proper to meet in the world with cheerfulness and urbanity, without forming with them an indissoluble companionship. Unsuitable alliances may bring unexpected troubles.

THE BLIND MAN AND THE SNAKE.

Once on a time a Blind Man, and one that saw, were travelling together. They halted at night at a place in a wild tract of country. In the dim grey of the morning they rose to pursue their journey. The Blind Man was searching for his whip, and it so chanced that a Snake lay there frozen by the cold. He took it up, imagining it was his whip. When he touched it with his hand, he found it somewhat softer and nicer than his own whip, at which he was pleased, though it must belong to some other traveller still asleep. He mounted his horse cheerfully, and forgot the whip that he had lost. When the day began to dawn, his companion who

could see, looked, and, behold, there was a Snake in the hand of the Blind Man! "Comrade," he shouted out, "what thou tookest for a whip is a poisonous snake. Fling it away before it makes a wound on thy hand." The Blind Man fancied his companion coveted the whip, and replied, "O friend! I left my whip, and chance has given me a better one. Thou, too, if fortune befriend thee, wilt find a nice whip. But I am not one of those who would allow my whip to be wheedled out of my hand by imaginary tales." He that could see laughed, and said, "O brother! my duty as thy companion demands that I should tell thee of thy danger. Listen to what I say, and throw down that Snake." The Blind Man frowned, and said, "Thou hast taken a longing for my whip, and thou pressest me beyond all bounds to throw it away, in the greedy hope that when I throw it down thou mayest pick it up. Do not indulge a vain idea, and give up coveting a gift that Providence has put into my hands." The more the man that could see urged his point, and confirmed it by solemn entreaties and oaths, the less heed did the Blind Man pay to him. So when the air became warm, and the Snake's body got rid of its chill, it twisted itself back and wounded the Blind Man in the hand, and killed him.

Evil men despise and resent the warnings of those who tell them to quit hold of worldly pleasure, which is gratifying to the sense, but deadly to the soul.

The foregoing apologues, though stripped somewhat of their literary ornaments, and separated from the surrounding narrative, will afford some idea of the shrewd sense and practical wisdom of the Fables of Pilpay.

A WEEK IN WURTEMBERG.

(*Concluded.*)

KORNTHAL:—THE CHRISTIAN COLONY.

KORNTHAL is a small village, numbering probably not more than from seven to eight hundred inhabitants; yet it is one of the most uniquely interesting places the traveller can find in any country. Its outward appearance possesses no attraction. There is too much uniformity in its streets and houses to be very picturesque; and yet there is something, not merely singularly neat and orderly, but attractive

too, in its little gable-roofed houses, each standing on its separate site and surrounded by its little plot of garden land, whilst everything both in the place and in its inhabitants is stamped with the appearance of industry, order, and prosperity. Six-and-thirty years ago, the spot now occupied by Kornthal was nothing but a manor, with a few buildings upon it and an ill-cultivated farm. Now it is well tilled, possesses good roads, and is the seat of a prosperous community. The origin and history of this settlement may, we think, prove not uninteresting.

The year 1816 was marked in Würtemberg by the immense number of those,—in many instances its best and even more wealthy inhabitants,—who left the country to seek a home in other lands. A chief cause of this expatriation was the introduction some years previously of the new Liturgy and the teaching of new doctrines—the *Neology* of that day—which extensively prevailed in church and school. A representation was made on the subject to the king by Hoffmann, then a public notary, in which he showed the cause of the evil, and pleaded for permission on behalf of such as felt aggrieved to form themselves into separate communities, in which they might be allowed full liberty of religious belief and of church ordinances: such a concession, Hoffmann assured the king, would have the effect of retaining all the inhabitants whose loss could be any detriment to the state. The matter remained, as might be expected, long in abeyance. Hundreds, and even thousands, who were preparing to emigrate, were induced to remain and await the result of Hoffmann's constantly renewed efforts. As time passed, many, wearied with delay, sold their goods and sought freedom in America or in Russia, where the Emperor Alexander permitted them to settle and enjoy the free exercise of their religion. Each such act was a new argument for Hoffmann's cause; and at last, the necessity

becoming each day more imminent, the concession came with many limitations and provisions from the government to form a settlement with the objects and under the conditions proposed. This was in October 1818; and in the first month of 1819, after encountering great difficulty in obtaining a site, the Christian men who associated themselves with Hoffmann succeeded in purchasing from its former possessor the manor of Kornthal for the sum of 113,700 florins. They did this in full assurance that the party they represented in the Church were not actuated by any mere idle and groundless dissatisfaction, but would exhibit the reality of their earnestness by coming forward, albeit at great sacrifice to themselves, and supporting them in this large undertaking. And so it proved. Wöhr, a "keeper of sheep," and Maisch, a "tiller of the ground," were for two months with their families the only inhabitants of the new settlement. They built; and as they built, inhabitants came to occupy. The hall of the old manor-house was soon too strait for the numbers who flocked to Kornthal on the Sunday to worship. The large barn belonging to the former farm-yard was next too small. Men were sick of a Liturgy forced upon them at the point of the sword, and rejoiced to escape from the teaching of the new gospel that was heard in the land by a return to the old paths. As summer advanced, the Sabbath saw them assembled under the blue sky. And beneath the same canopy of heaven, on the 9th of July, only three months after the first house was commenced, the whole of the already numerous community, and more than a thousand beside, were gathered together in the glad solemnity of laying the foundation-stone of their present "House of Prayer." The building was completed, through extraordinary effort, in four months. It will hold nearly two thousand hearers, but on the day of opening a concourse of eight thousand persons

necessitated the service of inauguration to take place outside the walls.

In the month of August the inhabitants of Kornthal received the royal privilege, their promised constitution, which, under thirty articles, secured to them the free exercise of their religion, and gave them a power of internal government; at the same time binding them to submission to the royal authority, and conformity to the civil laws in matters connected with the administration of justice and other public affairs.

We have not space to pursue the history of this interesting society, further than to say, that from the period of its first foundation it advanced rapidly. Schools were established,—high schools, ordinary schools, infant schools, and orphan schools,—which were sought by many from far and near, and which number at the present time at least three hundred scholars. Every member joining the community joins it as a religious body, and is required to submit to the rule and discipline of the church. The admission takes place by the vote of the community, by which also the choice of the pastor and superintendent, and all other appointments, are decided. Suspension from the ordinance of the Lord's Supper is the measure of discipline adopted in instances of improper conduct, if private monition be disregarded. Persistence in such a course is, or *is to be*, met by exclusion from the community, in other words, expulsion from the place; *is to be* met, we say, because during the thirty-six years of their history, the case demanding this ultimate act of discipline has not presented itself. A return is made to the magistracy of the district of all that comes under the cognisance of the civil administration; but hitherto they have had no cases of crime to report, and no legal processes, no bankruptcies, no street disturbances or family disputes, no differences of any kind, to refer to the judicial

authorities. Begging is regarded as a thing not to be tolerated amongst a Christian community, where all are bound to assist such as are disabled by age or sickness, and where none are excused from work who have the power. It has, therefore, no existence. The Church, we have already said, needed to be built almost before the dwelling-houses were erected; for the prison, on the contrary, there existed no such pressing necessity. Nineteen years passed before it seems to have occurred to the good people's minds that their village was incomplete in that which is generally regarded as a very necessary appendage. At length, rather by way of provision in case the necessity should arise than for any actual need, a small place of confinement was built, which has, we believe, been used in the case of one or two of the younger members, for whom the church discipline seemed to possess few terrors. There is a fund, managed by the superintendent, for the deposit of savings, for loans, and for the insurance of cattle and farming stock. Having no idleness, no crime, no police, or other similar expenses, and no luxuriant expenditure, it may well be conceived that the people have advanced rapidly in temporal prosperity. A large amount is expended in charity, and an immense outlay has been needed for their buildings and roads, but there has never been lack; and they have, in a physical as well as in a moral sense, literally converted a waste "wilderness into a fruitful field." The taxes are paid to the government, as in other places, but the whole amount is paid directly by the superintendent at the fixed periods, so that the government is spared the pains of collection. "Unto Cæsar," they say, "the things that are Cæsar's, as well as unto God the things that are God's."

The doctrines maintained by the community of Kornthal are, with one or two unimportant additions, precisely those of the Augsburg Confession, and the character of the teaching

is that which is indicated by the names of Arndt, Spener, Bogatzky, Osiander, Bengel, Storr, Rieger, and others of that band of holy men whose names are associated with the purest period of their country's religious teaching. Besides the three Sabbath services, a service is conducted in the church, or "house of prayer," as it is termed, every evening of the week. Family worship is observed in each house, and classes for instruction exist by which to train up the younger members of the households. A spirit of brotherly love is a marked characteristic of these people, who with all their strictness refuse fellowship to none who love the Lord Jesus, be they of what sect or name they may; and a dweller amongst them has before him as complete a specimen of a living Bible Christianity as probably any place of like size can present. Kornthal has been blessed throughout its history with excellent men as pastors and superintendents. Hoffmann its founder,—who afterwards formed a second community on the same principles in the south of Würtemberg, called Wilhelmsdorf, which is a kind of colony from Kornthal and enjoys the same privileges,—was a noble-hearted man, and perpetuates his name and his excellencies in a son, who is at the present time one of the brightest ornaments of Germany—Professor Hoffmann of Berlin. Kapff, the prelate at Stuttgart, was for long its much-loved pastor. Staut, who fills that office now, is one of the most esteemed of the Würtemberg clergy.

We had thought to give some incidents of our short stay in Kornthal, but must forego. We were received at the inn rather as a friend than in any other manner, and were much attracted by the appearance it presented. The room we occupied was furnished with the Scriptures and religious books; it contained a missionary cabinet of considerable size, consisting of curiosities received from mission-stations in foreign parts; and it was hung from floor to ceiling on

all the four sides, with small pictures or coloured engravings representing subjects in Bible history, altogether two hundred in number. The pastor being absent at the time, the hostess asked the superintendent to spend an hour or two with us, together with two or three of the villagers, who were esteemed judges of wine. A double object was designed in this. And, as we sat together, we had the pleasure of gaining from our evening's intercourse much insight into the Christian life and past history of Kornthal, as well as of assisting to determine the cider which should be supplied to the inhabitants of Kornthal for the next year's consumption. All such matters are under the strict surveillance of the superintendent; and, although we did not put the hostess to the test, we learned that had we asked for wine beyond a second glass within a certain limited period, the rules of the place would have forbidden its supply. This kind of Maine law is not peculiar to Kornthal. Throughout Würtemberg, according to a measure introduced in the Parliament in 1852 by the prelate Kapff, the liberty to enter a public-house is prohibited to all under the age of eighteen years,—an act which, although frequently evaded, it is said has been productive of very beneficial results in restraining the formation of habits of drinking and idleness.

We would gladly have stayed longer at Kornthal and enjoyed more of its pleasing society. We were invited to call on the widow of the late missionary Weitbrecht, who, like others similarly circumstanced, has found in the retirement of Kornthal a congenial place in which to spend her widowhood. But time pressed; and the next evening after that on which we saw the moon rise so beautifully over Kornthal, we had passed the frontiers of Germany, and were finding out new objects of Christian interest and new sources of hallowed enjoyment in the half-French, half-German city of Strasburg.

T. H. G.

PROVERBS OF SOLOMON.

No. I.—A WOUNDED SPIRIT.

“The spirit of a man will sustain his infirmity: but a wounded spirit who can bear?”—Chap. xviii. 14.

Good health is athletic. It rather courts than refuses toil; and whether it be in climbing the mountain, or in the long pedestrian journey,—whether it be in the chase or the battle,—in rowing the skiff or waging war with the beasts of the forest,—the labour is itself an excitement, and there is a positive pleasure in the exercise of skill and agility and physical power.

There is a similar energy in a healthy soul. Where the understanding is vigorous and the conscience serene, and where the devout and benevolent affections are rightly developed, it is a pleasure to the man to exert his mind or his moral powers. He bends over the deep problem, or bestirs him to master the new science, or charges his memory with this and the other foreign tongue. Or if called to pursuits still nobler, he rejoices to carry out some scheme of arduous philanthropy; and there seems no limit to his dispersive good offices, his friendly undertakings, his generous feats, his self-denying perseverance, and all his labours of love.

There is one athletic exhibition at which we have often wondered: it is the load which a strong man is able to sustain. There he goes, carrying almost unconscious a burden which would crush to the earth the unpractised strength of other people; or here is a mighty load,—a heavy beam or a bulky bale, which you would not touch with one of your fingers;—but he wriggles under it and gets it on his shoulder and marches off with it, like Samson with

the gates of Gaza. Or look into this armoury : it is as much as you can do to move that coat of mail ; and were you locked up inside of it, you would either stand as moveless as a statue, or would sink to the ground in irrecoverable prostration. But that panoply was the every-day wear of an ancient warrior. He got so used to it that he seldom felt the vizor on his brow, and, instead of standing stock-still in the encasing iron, he made the pavement quiver with his stalwart stride, and in case of need could snatch up and carry to the rear a wounded comrade.

Yet there is one feat more wonderful, and that is the load of care and responsibility which some strong spirits carry. Here is an influential citizen. It is not only his own business so widely ramified—with nerves and feelers that reticulate all round the world, and so sensitive that it trembles with each day's barometric pressure ; but it is the care of a hundred other interests : the clients who have imperilled their earthly all on his individual skill or fidelity ; the dependants who look up to him for protection, for subsistence, for promotion ; the projects of which his judgment is the pivot ; the structures of which his reputation or his resources are the pedestal. And here is a hard-working man. He loves his wife ; he loves his children ; and it is all that his brawny arm can do to hold at bay that strong man, Want, who wrestles daily at his cottage-door ; and he knows that were he laid low for a few short weeks, the pride of his little parlour would soon vanish piecemeal,—whilst an accident, or an early death, or a cureless malady, would reduce the whole to beggary : and amidst the gallant struggle markets glut, or provisions rise, or in the care of an orphan family or in the sickness of his own, some unlooked-for burden falls on shoulders already overlaiden : and as still he plies his daily task, it is not the tale of bricks with which he mounts the ladder, nor is it the sledge-hammer

which he plies so steadily, that proves him a sturdy man, but it is this load of responsibility which he bears so nobly, this burden of others' weal and woe with which he trudges along life's daily track without a murmur or a groan. The ancients fabled a giant who poised upon his back the world which we inhabit; but a grander feat than they ascribed to Atlas is performed by every humble citizen who carries without cumbering others the little world of his own household, and makes no outcry or complaint:—by every statesman like De Witt, or Gustavus, or Washington, who is the pillar that supports a land:—by every pure and public-minded Christian on whom, if not the apostolic care of all the churches, there cometh daily the care of objects which it were a sin to sacrifice, and of interests which it is hard to reconcile.

Yet, as we have said, such an energetic and elastic thing is "the spirit of a man," that if the heart is hale and the conscience calm, it will not only bear this burden without rebellion, but will rather hail the task which tries its mettle and draws forth its various powers. And not only so, but in addition to the load of daily duties a strong spirit will bear up beneath the pressure of a severe affliction; and few things are more touching in the annals of our Meshech, than the deeds that have been done by men who all the time were struggling with some terrible infirmity. Like the hero who, as the fight proceeds still keeps his post, yet every hour grows paler, and, when at last the victors are cheering to the final charge, he sinks dying to the earth and reveals the wound he had concealed all day,—much of this world's best work has been achieved by men who already felt the fatal shaft inside the corslet, and who in performing duty had first to conquer pain. And we view tenderly not only as treasures which in fetching from the deep the divers left their health or their lives behind them; but we prize as

trophies of man's immortal nature,—as triumphs of mind over matter,—those public services which have been rendered in the midst of private sorrow: those bursts of eloquence which have been uttered from off the rack of bodily anguish, and those sweet songs, which, like the strains of Philomel, have gushed from a pierced bosom: those researches which have been followed and those pinnacles which have been scaled by men who had strength to take them to the top, but not enough to bring them back to the valley: those fields which have been sown by husbandmen brave amidst bereavements, and who mingled tears with the precious seed they scattered:—those structures which have been raised by men who as the cement built their own life's blood into them, and those prescriptions for others which have been made by physicians who, after curing their patient, themselves went home to die. As such conquests of infirmity we revere the work that Brainerd and Martyn did for the heathen amidst disease and daily dying: the sermons which, like martyrs from the flaming pile, Macall and Robert Hall preached forth from the midst of agony: the appeals and awakening calls which Baxter indited with wan fingers and ghostly visage: the Progress which the blessed Pilgrim contrived to dream in a dreary prison. And believing as we do that much of yesterday's work was done by men who went forth to labour leaving some great anxiety in their dwelling, or fearing to meet it as soon as they returned:—knowing, as we do, that most of the valiant workers and worthiest benefactors of our day are men who carry in their flesh a constant thorn,—we cannot meet in our progress through the streets such Christian heroes without sometimes thinking, “There you go, another of the Invalid Invincibles! Out of weakness made strong, amidst all your philanthropic toils and tireless activity, men little think of your silent martyrdom. A few of your familiar

friends may know it,—that furrowed brow begins to betray it;—but who would surmise that it is from a sleepless night or a house of mourning that you have issued on this day's work? and amidst movements so vivacious and words so cheerful, who would imagine that you were carrying the cross of straitened circumstances, of torturing pain, of an incurable malady?" Yes, reader, many are the stout hearts, and, through Christ strengthening them, not a few are the weak ones, which sustain such infirmity: and, when we come to inquire, it is surprising how many of the travellers Zionward are limping like Jacob, or lame of both feet like Mephibosheth: how many, like Simon of Cyrene, are carrying a cross; or like Paul, are concealing a thorn in their flesh. But, alas! for the wound in the spirit!—the blasted affection, which leaves the man without a motive,—the bleeding conscience, which is draining away the man's spiritual strength, and his power of holy performance. Now that the arrow has entered the citadel of life the warrior sinks to the dust, and is held down by his own mail as by a mountain. And with this sword through his spirit the loftiest presence in the ranks of moral heroism will tremble like a leaf or wither like a worm, bereft of all his chivalry.

When the conscience is wounded, the prime necessity is to get it cured;—not calmed or comforted, but cured. Pain is a mercy, for it is a warning of danger.* It is an intimation of evil, and of evil which, if not obviated, may end in death. And just as bodily anguish moves you to take means for its removal,—as you don't take refuge from it in some cowardly soporific, but seek a cure in medicine; so mental anguish, the distress you feel after doing wrong, this pain is a mercy also. It tells you that you have done a damage to your soul, and that if you do not get a thorough cure your soul may die. And speaking as to wise men, we

* See "Excelsior," vol. iii. p. 300.

say,—Deal wisely with this wound. Don't try to forget it, don't try to heal it slightly, or to dull its anguish by deceitful opiates : for, like the foolish man, who, in escaping the physician, finds the grave, whilst flattering yourself that the danger is past because the pain is gone, it may turn out that the pain is gone because death is begun ;—necrosis, insensibility, has set in. It was thus that some of the most flagitious outcasts now living were brought to their present reprobacy. When first they did wrong their conscience pained them : but they took refuge in drink, or merry company, or in infidelity, or in fresh and more fearful sinning : till their conscience seared, and, past feeling, God gave them over to a reprobate mind, so that they now work all iniquity with greediness. But do you, with your wounded conscience, go to God. To that omnipotent Physician say, "Have mercy upon me, O God, according to Thy loving-kindness : according unto the multitude of Thy tender mercies, blot out my transgressions." And whilst you pray for pardon, pray for purity : "Wash me thoroughly from mine iniquity, and cleanse me from my sin." And in order to pray hopefully, fix your eye on one of those promises of mercy "which have been declared unto mankind in Christ Jesus our Lord." "The blood of Jesus Christ cleanseth us from all sin." "Him God hath set forth to be a Propitiation through faith in His blood,—to declare His righteousness for the remission of sins,—that He might be just, and the justifier of him who believeth in Jesus." And just as you get hope in God's mercy, so will you get hatred of that sin which has offended Him and injured your soul :—till in the dawn of the peace unspeakable the gloomy shadows of conviction and coming judgment yield to the day-spring from on high, and amidst the sweet sorrows of repentance and the good news of remission, the bones that were broken begin to rejoice.

Reader, the Gospel does not undertake to transfigure

earth : it does not profess to change bleak climates into balm, or arduous occupations into graceful pastimes ; but it offers to transform, to transfigure you. By curing the hectic of the soul,—the death-stab in the conscience,—it offers to send you singing on the way to Immortality,—as well you may, although there be thorns in your path, nay, even thorns in your flesh, but no poisoned arrow in your spirit. Cured of that wound and at peace with God through Jesus Christ, to-morrow's task may be toilsome,—to-day's lot may be lonely,—life's horizon may be dusky grey or thunder-laden : but you are one of the Lord's ransomed ; you are returning to Zion ; everlasting joys are in store for you, and sorrow and sighing will soon be fled away.

Even so with regard to the wounded affection. When God gives an organ or an attribute, we may be very sure that He has provided the counterpart object and the appropriate element. Its fins tell us that that little fish was made to swim ; its wings tell us that this little bird was made to fly ; its finger-rootlets tell us that yonder ivy was made to clasp and climb ;—his yearning, admiring, adoring faculty tells us that Man was made to love and worship. You put the golden carp in a crystal vase ; you shut up the singing lark in a wooden cage ; you plant the ivy in a Wardian case ; and you bestow your whole heart, and soul, and strength, and mind, upon your dearest earthly friend. And each has a little of its element,—a little exercise for its peculiar faculty,—exercise enough to feel at last cabined, cribbed, confined. The fish has room enough to float, and the bird has space enough to flutter : the plant has room to grow and dispread itself a little, and the creature-worshipper has object sufficient to take him out of himself a little way, and break up his absolute selfishness. Yet this is not enough. It is only enough to awaken an instinct which it cannot gratify ; and till it gets its Creator's

counterpart, the craving for its proper good will keep the imprisoned creature restless and unquiet. The finny and the feathered captive, each alike wants something to complete the fulness of its joy:—the twining herb reaches the limit of its range, and curls up its tendrils or twists them back upon itself: and the creature-worshipper is haunted with fear of evil, or grows cross and weary with his idol. But in all this, it is man who is marring the work of God. Give each his proper scope, and you will at once make each of them happy. That golden fish God made for the sunny eastern river; that strong-winged bird He made for the blue and boundless firmament; that clasping, tenacious plant He made for the tall crag or the towering forest-tree: even as for that panting, aspiring, clinging soul of yours, He has provided a rest and a rejoicing in His own infinite excellence and uncreated all-sufficiency. Reader, take that range. Launching into the river of God's pleasure; mounting into the high noon of adoring assurance; clinging to the Rock of Ages, and enclasping the Tree of Life,—rise to the fulness of your immortal powers, and taste the blessedness which was man's in the beginning. And if this you learn to do, you need mourn no irreparable loss nor fear any cureless sorrow:—for in all events your heart's best treasure is secure, your truest Friend is deathless. There may be danger in the sunny creek, but you have a hiding-place and safety in the deep and ample river. There may be a serpent in the grass, or an inundation may drown the nest amidst the meadow flowers; but even while you alight on the sod you keep your eye on the firmament, and when the fields are flooded you can soar upward and sing at Heaven's gate. A dear companion may die, or a fond hope may prove a bitter disappointment; but "The Lord liveth, and blessed be my Rock." "My flesh and my heart faileth: but God is the strength (margin, THE ROCK) of my heart, and my portion for ever."

J. H.

REVIEW OF THE MONTH.

THE Universal Exposition was to open on the 1st of May; but it had to be postponed till the 15th, and even now it appears to be in the same "backward" state with the rest of the season.

But nature is stronger than emperors, and does not need to wait on artisans and contractors. On May-morning Mount Vesuvius opened a grand exhibition of his own, which has since been giving a nightly excitement to the people of Naples. The enormous outburst of lava has destroyed many plantations and vineyards; and with the lurid blue of the landscape, and with the cloud of fire-coloured smoke resting on the immediate scene of devastation, whilst the mountain quakes with its own artillery, the nocturnal spectacle must be one of the most awful conceivable. The correspondent of a London paper describes a plain of burning coke, some 200 feet wide, with lava under it, which he watched moving onward, "until, accumulating in large masses, over it thundered into the valley beneath. Down, down we watched the red line in the distance, burning and destroying everything it met with. A whole plantation of chestnut-trees yielded to its power: they twisted, and screeched, and groaned like martyrs in an *auto da fê*, and then gave signals, by a brilliant flame, that their sufferings were over. The noise of the advancing stream was as that of an Alpine torrent over a shingly bed—sh-sh-sh-sh: such was the continued murmur of the thousands of tons of burning coke which were ever moving on, and tumbling mass over mass."

To those who value the truest philosophy in union with enlightened and exalted piety, we would commend "Passing Thoughts," by Mr. Douglas of Cavers,—the first number of

which has yielded us rare enjoyment. "Goethe," "Rousseau," "Humboldt," "Italy," "Cousin and Eclecticism," "Grecian History," are the topics under which the accomplished author has given some of the ripe results of his extensive learning, his delicate observation, and his profound and original thinking. We hope the series will not be a short one: for it is seldom that a "heart" so "fixed" is united to a spirit so free, and seldom that even from the pen of a layman so charming a contribution has been made to the pages of Christian literature.

The Rev. J. Anderson's "Bible Light from Bible Lands," is an interesting volume of Scripture illustration, by one well acquainted with both the Word of God and the Holy Land. The second volume of "The Library of Biblical Literature," like its predecessor, contains a large amount of information in a pleasing and popular form. "A Pastor's Sketches," by Dr. Spencer of Brooklyn, are not the less valuable because many a minister, if only gifted with sufficient descriptive power might delineate similar scenes; whilst they supply hints and precedents invaluable to ministers whose experience is less extensive.

In a completed volume we have now before us the Lectures delivered to the Young Men's Christian Association in Exeter Hall during last winter. They will convey to future times a noble specimen of the eloquent instruction which was provided for the youth of the metropolis by some of the master-spirits of this age. We have here, not only the spirit-stirring effusions of Gough, and Guthrie, and Stowell; but the lovers of useful knowledge and original research will find abundant gratification in Archbishop Whately on "The Origin of Civilisation,"—in Mr. Burgess on Greek Christianity,—in Mr. Martin's amusing narrative of the "Opposition to Great Inventions," and in what is to us the gem of the series, Mr. Alford's Lecture on "The Intelligent Study of Holy Scripture."

INDEX.

- Actinism, the principle most active in photography, 27, note.
- Admiral butterfly, the, 259.
- Alceste, wreck of the, 175.
- Alchemists, results of their labours, 25.
- Alston Moor lead-mines, description of, 370; their development due to the perseverance of two miners, 373.
- Anatomy. See Ourselves.
- Anderson, Rev. J., *Ladies of the Reformation*, 78; *Bible Light from Bible Lands*, 450.
- Animals, number of existing species of, 93.
- Annelida, or worms, 93-102.
- Ant, eyes of the, 223.
- Apollinaris, why the charge of heresy was raised against him, 211, 212.
- Arctic expeditions, hardships and difficulties experienced in, 175-178.
- Arctic fox, fineness and thickness of its fur, 423; its vigilance, ib.; its migrations, ib.; its food, 424; its method of catching salmon, ib.; its flesh, 425; used as a messenger by the commanders of the Arctic expeditions, 426, 427.
- "Around the throne of God in heaven," 119, 120.
- Articulata, structure of, 93; arrangement of nerves in, 94.
- Augsburg, printing establishment at, 361.
- Augustine, value of the debt Britain is due to, 280, 281.
- Babyrusa of Malaya, 152.
- Baker, Captain, noble devotion of, 40-42.
- Barber, Miss, *Sorrows of the Streets*, 232.
- Barth, Dr., death of, 78.
- Basle Missionary Society, number of missionaries and ministers sent forth from, 267.
- Bayne, Peter, M.A., *The Christian Life, Social and Individual*, 159.
- Bees, peculiarity of their eyes, 223; their instinct, 15, 358.
- Beetles, muscular strength of various species of, 225, 226; organs of their mouth, 228; their perfectness as insects, 355, 356.
- Bennet, or "Mother of Waters," exploration of, by Dr. W. B. Rennie, 231.
- Biblical Literature, Library of*, 450.
- Biography: Dr. Kitto, 68; Horace Walpole, 103; Rubens, 192; Lady Mary Wortley Montagu, 251; Lady Rachel Russell, 389.
- Birds, number of species of, 93, note.
- Birkenhead, loss of the, 42.
- Blind man, the, who mistook a snake for a whip, 434.
- Blucher's "Forwards!" By M. F. Tupper, 142, 143.
- Borneo swine, 152, 153.
- Bowring, Sir John, his indifference to the success of Christian missions in China, 230.
- Boyhood, 24.
- Bridgeman, Laura, the deaf-mute, 14.
- Britannia, humanity of the crew of, 42.
- British mining: Lead, 369-375; Coal, 415-421.
- British seamen, instances of their generosity and endurance, 39-44, 170-178.
- Brother's Keeper, My: Chap. XII. 45-54; Chap. XIII. 112-122; Chap. XIV. 282-289; Conclusion, 305-337.
- Brutes, to what extent capable of reasoning, 9; docility of, 9, 10; the difference between man and the higher brutes, 11, 12; their inability to form any distinct notion of number, 14; various impulses of, 17; is their fear of man an implanted instinct? 23.
- Burns, Rev. J. D., *Vision of Prophecy*, 79.
- Butterflies, organs of their mouth, 228; different species of, 258; beauty and number of the scales on, 260, 261; history of the transformations they are subject to, 261-265. See Psyche.
- Byron, Commodore, his narrative of the wreck of H. M. S. Wager, 171-173.
- Calotype process of Mr. Fox Talbot, 28.
- Camera obscura, 26.
- Campbell, Thomas, on the feelings excited on hearing the roar of the lion, 217.
- Cannstadt, its associations, 267.
- Cantharis, or blister-fly, 556.
- Cat, instance of reasoning faculties in a, 10.
- Caterpillar, history of a, 261-265.
- Celestial world, contemplations on the, 83, 84.
- Cerebral nerves, 148, 149.
- Cervical nerves, 150.
- Charcoal, use of, as a disinfectant, 303.
- Cheever, Mr., on the volcanoes of the Pacific, 245.
- Chemistry. See Photography.
- China, progress of the war in, 229, 230.
- "Christian Biography," 159.
- Christopher of Utterheim, 348.
- Chrysalis state, description of, 263-265.
- Church history, after the time of the Apostles, 205; as written by the Fathers defective, 206, 207. See Times of Refreshing.
- Ciliae of the nostrils, their design, 378, 379.
- Clinton, H. Fynes, *Literary Remains*, 79.

- Coal, method of its occurrence, 415, 416; its vegetable origin, 416, 417.
 Coal-fields of Great Britain and Ireland, their extent, 415.
 Coal-formations, in the Mississippi river, 417; process of, 417-419; disturbance of, 420, 421.
 Cochineal insect, 359.
 Cocker, Edward, a practitioner in the arts of writing, arithmetic, and engraving, 179; his *Arithmetic*, a posthumous publication, *ib.*; its success, 181.
 Cocker's *Arithmetic*, 179-184.
 Coleoptera, or sheath-wings, structure of their wings, 227; their beauty of colour, 266.
 Collodion process, 29.
 Columba, 81., 279.
 Conger-eels, effect produced on, by excessive frost, 802.
 Conscience, Hendrik, *Tales of Flemish Life*, 159.
 Cotta, Baron, his printing establishment, 260, 261.
 Cowper, *The Task* (B. Foster), 80; *Life of*, 159.
 Crazy bridge, the, 202.
 Cumming, Mr. Gordon, his adventures with lions, 217, 218.
 Daguerre, M. his improvements in photography, 27.
 Daguerreotype process, 28, 29.
 Darkness, its influence in counteracting the destructive action of sunshine, 32.
 Darwin, Mr., on the value of earth-worms in fertilising lands, 101; on the flesh of the puma, or South American lion, 216.
 David, the Triumph of, 55-57.
 Davy, Sir Humphry, assistance rendered by him to Mr. Wedgwood in his photographic experiments, 26.
 Death-watch, 356.
 De la Beche, Sir Henry, death of, 387.
 "Descent from the Cross," by Rubens, history of, 194, 195; description of, 195, 196; notice of, by Sir Joshua Reynolds, 196; engravings of, 196, 200.
 Diptera, or two-wings, 359.
 Divine wisdom apparent in the provision made for the well-being of the inferior animals, 102.
 Dog, instance of reasoning powers in a, 10. Dorsal nerves, 150.
 Douglas, Mr., of Cavers, *Passing Thoughts*, 449.
 Dragon-fly, number of its eyes, 223; its powers of flight, 227, 228, 357.
 Earth, reflections on its future condition, 235, 236; evidences of subterranean agency in, 241.
 Earth-worm, its rings, 100; value of, in fertilising lands, 101.
 Eastwick, Professor, his translation of Pilpay's fables, 420.
 Edgar, Mr., *History for Boys*, 79.
 Elephant, docility of, 12.
 English Letter-writers: Horace Walpole, 103-111; Lady Mary Wortley Montagu, 250-256; Lady Rachel Russell, 389-401. English character, 103, 104.
Englishwoman in Russia, 79.
 Entoma, derivation of the word, 223.
 Entomology. See Insecta.
 Essay: On instinct, 8-24.
 Euclid's Elements of Geometry, 263.
 Fables of Pilpay: The flies and the jar of honey, 431, 432; The mouse and the frog, 432, 433; The blind man who mistook a snake for a whip, 434.
 Falcon, how trained to pursue the gazelle in Assyria, 353.
 Farmer, Miss, *Tonga and the Friendly Isles*, 232.
 "Fathers," amount of credit to be given to their opinions and narratives, 205-207; their overbearing conduct, 209-212.
 Faucher, M. Léon, death of, 77, 78.
 Finn, Mr., ashes of ancient burnt sacrifices probably discovered outside the Damascus gate, 388.
 Fire-flies, 163, 356.
 Fishes, number of species of, 93, note.
 "Flat veins," 372.
 Flea, its leaping powers, 227.
 Flies, the, and the jar of honey, 431, 432.
 Franklin, Sir John, his first overland journey to the Arctic Ocean, 176-178.
 Frost of 1855, intensity of, 301, 302.
 Galena, 371.
 Ganglia, 151.
 Ganglionic system, 151.
 Gardner, Dr., *Christian Cyclopaedia*, 159.
 Gayer, Sir John, his providential escape from a lion, how marked by him, 221.
 Gazelle, the roe of Scripture, 350; the lustre of its eyes, *ib.*; its fleetness, 351, 354; its colour, 352; methods of hunting it in Syria and Babylonia, 352, 353; savouriness of its flesh, 353; uses made of its skin and horns, 354.
 Geneva, interesting movement among the Romanists in, 387.
 Geology, its revelations of the earth's former condition, 242, 243.
 Geometrical propositions, a new method of demonstrating, 382-386.
 German Classics, 360.
 German clergyman, description of the life of a, 134, 135; hospitality of, 137, 138.
 Gibbon, his account of Pilpay's fables, 429.
 Giraffe, the, closely allied to the deer family, 33; its food, *ib.*; its horns, *ib.*; prominence and position of its eyes, 34; mobility of its lips and tongue, 34, 35; anecdotes of, *ib.*; its neck, 35, 36; its flesh, hide, and tail, 37; in its wild state, 36; in the Zoological Gardens, 37, 38; precocity of its young, 37; improbability of its having been known to the Israelites, 28.
 Glow-worm, 356.
 Gnat, the, 359; mouth of, 228.

Goldsmith's *Deserted Village* (Etching Club), 80.
 Gordon, Dr., *Christ as made known to the Ancient Church*, 158.
 Gould, Mr., on the tiger-wolf, 247.
 Great northern diver, lines on a, 290, 291.
 Great Pictures, Notes on, 192-200.
 Greenough, G. B., death of, 387.
 Guernsey, frequent shipwrecks on the rocks of, 414.
 Guide, the, 201.
 Gunn, Mr., on the habits of the tiger-wolf, 247, 248.
 Halliot, or sea-ear, 411.
 Hamberg, Mr., *The Chinese Rebel Chief, Hung-Siu-Tsuen*, 159.
 Hardcastle, Mr., remark by, 5.
 Hearts of Oak: Generosity, 39-44; Endurance, 170-178.
 Heavens, division of, by the Hebrews, 82.
 Hellographs, or sun-drawings, 26.
 Hemiptera, or half-wings, 359.
 Heretica, many falsely so called in the early Church, 209, 210.
 Herschel, Sir William, on the present activity of volcanoes in the moon, 238, 239.
 Hispaniola, Scenes in, 161-169, 401-409.
 Hoffmann, Professor, his exertions in the establishment of the colony of Kornthal, 435, 436.
 House-fly, number of its eyes, 223; rapidity of its flight, 226; organs of its mouth, 228.
 Howe, John, edition of his works, 304.
 Humboldt, M., on the volcanoes in the moon, 243.
 Husain Vaiz, the Persian, his version of Pilpay's fables, 430.
 Huss, John, of Bohemia, 279.
 Hymenoptera, or membrane-wings, 358.
 Ichneumon-flies and the larvæ of butterflies, 16.
 Inoculation for small-pox, its introduction into England by Lady Mary Wortley Montagu, 253, 254.
 Insecta, 222-229; significance of the term, 223.
 Insects, surpass in instinct the higher brutes, 15; number of species of, 93, note, 222; variety of their structure and habits, *ib.*; their eyes, 223, 224; their various powers, 224, 225; their muscular strength, 225-227; their organisation, 227, 228; their transformations, 228, 229; groups into which they are divided, 355-359; industrial classes of, 358.
 Instinct, a treatise on, a desideratum, 8; what is signified by, 8, 9; to what extent man and brutes are severally actuated by, 9; of insects, 15; divinely implanted in animals, 17; how far modified by education, 23.
 Johnson, Dr., and Cocker's *Arithmetic*, 182, 183.
 Jones, Sir William, on the excellency of Pilpay's fables, 430.

Jovinian, abuse heaped upon him by Ambrose and Jerome, 212.
 Kirby and Spence, on the comparative velocity of the house-fly and the race-horse, 226.
 Kirchentag, or Free Convention of German Churches, 133.
 Kitto, Dr., cause of his deafness, 68; hardships of his youth, 69, 70; his Eastern travels, 71, 72; his publications, 72-74; his decline and death, 75, 76, 78.
 Knapp, the poet, recollections of, 271-274.
 Knight, Mr., *Knowledge is Power*, 80.
 Kornthal, the Christian colony, history of the establishment of, 434-437; doctrines maintained by the community at, 438, 439; incidents of a visit to, 440.
 Lady-bird, 356.
 Landela, Rev. W., *The Message of Christianity*, 232.
 Language as an instrument of thought a characteristic of man, 13.
 Lapland, favourable accounts of religious revivals in, 158.
 Layard, Dr., on the lions of Mesopotamia, 220; on hunting the gazelle in the plains of Babylonia, 353, 354.
 Lead-mines, method of working them, 374.
 Lead-ores, the conditions in which they are found indicate their being formed from an aqueous solution, 369.
 Leaf-worms, 97.
 Leech, the, its provision for locomotion, 101; structure of its mouth, *ib.*; blood not its natural food, *ib.*
 Leeuwenhoek, on the comparative capabilities of flight of the dragon-fly and the swallow, 227, 228.
 Lepidoptera, or scale-wings, their wings, 227; the transformations they are subject to, 261; order of, 358.
 Levi, Mr. Leone, *Manual of Mercantile Law*, 78.
 Lewis, Rev. George, *Doctrine of the Bible*, &c., 159.
 Life a voyage to eternity, 2, 3.
 Life, in its Intermediate Forms, No. I.; Annelida, 93-102; No. II. Insecta, 222-229, 259-265, 355-359.
 Lighthouse, the, 203, 204.
 Lion, the, considered the head of the order carnivora, 213; its treacherous character, 213, 214; its organisation, 214; distinction between the male and female, 214, 215; its nocturnal habits, 215; its ferocity, 215, 216; its flesh, 216; its roar, 216; its activity on stormy nights, 217; adventures with, 217, 218; in the Holy Land, 218, 219; providential escape from, 221.
 Literature: English letter-writers, 103, 261, 389; Cocker's *Arithmetic*, 179; Fables of Pilpay, 429.
 Lockhart, John Gibson, death of, 78.
 London, how supplied with daily provisions, 21, 22.

- Longfellow's *Golden Legend* (B. Foster and Jane E. Hay), 80.
- Lowe, Mr., on the weather of 1854, 160.
- Lumbar nerves, 150.
- Lunar scenery, 81-92, 233-245.
- Lydiard, Captain, gallant conduct of, 35, 40.
- Macorming, the, 401-409.
- Mactra stultorum, large quantities destroyed by the frost, 301.
- Magpie, wreck of the, 173, 174.
- Man, to what degree possessing instinct, 9, 11; difference between him and the higher brutes, 11, 12; his employment of arbitrary signs and language a characteristic of, 13, 14; his instincts overruled for the progress of society, 19, 20.
- Manchester, Free Library of, 160.
- Mare Imbrium, 89, 90, 236, 237.
- Marine worms. See Serpula.
- Marsupialia, varieties in the order of, 246.
- Martyrs before the Reformation, 346-348.
- Mathematics, benefits arising from the study of, 383, 384.
- Mayhew, Henry, *The Peasant Boy Philosopher*, 79.
- Mercantile code for all nations, conference upon, 78.
- Michelsen, Dr., *Modern Jesuitism*, 388.
- Miller, Hugh, description by, of the process of the formation of coal, 417-419.
- Milton's *L'Allegro* and *Il Penseroso* (B. Foster), 80.
- Mineralogy. See British Mining.
- Mining terms, 370, 371.
- Minstrel, the, in the dark, 293.
- Mollusca, 93.
- Montagu, Lady Mary Wortley, her birth and education, 250; effect produced on her mind by the literature of the day, 251; her clandestine marriage, and its result, 251, 252; accompanies her husband to Constantinople, 252; extracts from her Oriental letters, 253-256; introduces inoculation for small-pox into England, 253, 254; returns to England, 256; her quarrel with Pope, 257; her latter days, 258.
- Montgomery, James, life of, 304.
- Moon, appearance of the, as viewed through the telescope, 85; its mountains, 89; the Sea of Showers, 89, 90, 236, 237; the Bay of Rainbows, 91; present non-existence of water in, 91, 92; evidence of dried-up oceans in, 92; reflections on its former condition, 233-235; on its future state, 235; its ring-mountains, 236-238; no volcanoes at present in action there, 236-240; evidences of former volcanic activity in, 240.
- Mordella, number of eyes in the, 223.
- Morgan, Dr., *The Penitent*, 232.
- Morning ride, the, in Hispaniola, 161-169.
- Moths, transformations of, 269-262.
- Mouse, the, and the frog, 432, 433.
- Mud-worms, 37.
- Nala, singular power of multiplication possessed by, 99.
- Naked testacea, number of species of, 93, note.
- Natural theology, 18, 23.
- Nerves, nature of, 147; of sensation, 149; of motion, 150; ganglionic or sympathetic, 151.
- Nestorius of Antioch, accusations brought against him, 277; success of his preaching, 278.
- Neuroptera, or nerve-wings, 157.
- New Jonathan's, 187.
- New-year, a, 1-7.
- Newport, Mr., on the muscular power of a ground-beetle, 225, 226; of a stag-beetle, 226.
- Newton, Dr., Mr. Jackson's life of, 388.
- Nicholas, emperor of Russia, death of, 302.
- Niepee, M., his improvements in photography, 26, 27.
- Night views from my window, 81-92, 233-245.
- Nose, description of the various divisions of, 376, 377.
- Novatianists, were they schismatics? 211.
- Number, how far brutes and savage tribes are deficient in their ideas of, 14.
- Nun's Confession, the, 338-343; L'Envoi to, 409, 410.
- Nunstones, sulphur vein at, 371.
- Ormer-shell of the Channel Isles, why so called, 412; beauty of its internal surface, lb.; uses to which it is put, 413; rocks where it is found, 414.
- Orthoptera, or straight-wings, various species in the group, 357.
- Osborn, Commander, description of the use of the Arctic fox as a messenger, 426, 427.
- Ourselves: The spinal marrow and nerves, 146-151; The sense of touch, 294-300; The sense of smell, 376-381.
- Owen, Prof., on the structure and habits of the giraffe, 33, 34, 35, 36; on the various powers of insects, 224, 225.
- Pacific, isles of the, volcanic formation of, 240, 241, 244, 245; reflections on their past history, 245.
- Parables: The guide, 201; The crazy bridge, 202; The lighthouse, 203, 204.
- Paris, opening of the Universal Exposition in, 449.
- Perry, Captain, means adopted by him to relieve the tedium of an Arctic winter, 175, 176.
- Paulicians, history of the, 278.
- Peccaries of South America, 153.
- Pelagius, doubts respecting the charges of error and schism brought against him, 276, 277.
- Pellew, Sir Edward (Lord Exmouth), his bravery and presence of mind, 42-44.
- Persecutions in the primitive Church, their effect, 209.
- Phillips, Prof., on the present absence of

- water in the moon, and on the indications of former aqueous action, 92, note, 233; on the shape of the moon, 238, note.
- Photography, discovery of the art of, 26; improvements in, 26, 27; processes of, 27, 28; assistance it may render to the advance of science, 30-32.
- Pilpay's Fables, 429-435.
- Polynoe, structure of, 99.
- Polypes, number of species of, 93, note.
- Potamocharus penicillatus, of West Africa, 152.
- Prawn, structure of the, 93, 94.
- Preces Pauline*, 78.
- Printing-press, its effect in promoting truth, 344, 345.
- Priscillianists, their opinions not fully known, 211.
- Proverbs of Solomon, No. I. A wounded spirit, 441-448.
- Psyche (butterfly), curious analogy between it and the condition of man with regard to a future life, 15, 17, 264.
- Public funds, a convenient investment, 185.
- Quadrupeds, number of species of, 93, note.
- Quiet Heart, the*, 159.
- Radiata, number of species of, 93, note.
- Reason, instances of, in domestic animals, 9, 10.
- Reformation, the, 280, 349; martyrs before the, 346-348.
- Reid, Capt. Mayne, *The Forest Exiles*, 79.
- Rennie, Dr. W. B., successful result of his expedition to the "Benneh," 231.
- Reptiles, number of species of, 93, note.
- Revenue of the year, 302.
- Reynolds, Sir Joshua, remarks by, on Rubens' "Descent from the Cross," 196; on Rubens' skill as a painter, 197.
- Review of the Months, 77, 157, 229, 301, 387, 450.
- Robins and their Songs, 144, 145.
- Roe, the, or the gazelle, 350.
- Ross, Sir James, on the habits of the Arctic fox, 425.
- Rosse, Lord, hysteroscope, 91.
- Royal Exchange, 186.
- Rubens, Peter Paul, his birth and parentage, 193; visits Italy, ib.; enters the service of Vincenzo Gonzaga, 193, 194; paints "The Descent from the Cross," 194, 195; his treatment of that subject, 195, 196; executes the Medici series for the palace of Luxembourg, at Paris, 197; his diplomatic missions to Spain and England, 198; his death and burial, ib.; his private collection of works of art, 199; his pictures at the National Gallery and at the Pinacothek of Munich, 200; style of painting established by him in the Low Countries, ib.
- Russell, Lady Rachel, contrast between her and Lady Mary Wortley Montagu, 389; her birth, ib.; state of the country during her childhood, 390; is married to Lord Vaughan, 391; left a widow, is married to Lord William Russell, ib.; the happiness of her wedded life, ib.; extracts from her letters, 391-394; trial and condemnation of her husband, 394, 395; her exertions on his behalf, 395; her conduct during his last hours, 396; her subsequent history, 397-400.
- Sacral nerves, 150.
- Savage tribes, their deficiency in their ideas of number, 14.
- Sciatic nerves, 150.
- Scientific discovery, constant law observable in, 25.
- Scottish Psalms, edition of the, published by Johnston and Hunter, 303, 304.
- Scott's *Marmion* (B. Foster and J. Gilbert), 80.
- Scrip, signification of, 191.
- Sea-mouse (aphrodite), its gorgeous colours, 100.
- Seddon, Mr., his paintings illustrative of the Holy Land, 388.
- Self-explanatory Reference Bible, 387.
- Sensation, nerves of, 148, 149.
- Sense, language of, 381.
- Senses, the, 294.
- Serpula contortuplicata, description of, 96-99.
- Signs, employment of, characteristic of man, 13.
- Silkworm moth, 261.
- Silver, amount of, in lead-ore, 372.
- Skin, the, description of, 195, 196; sensibility of, 397, 398.
- Smell, sense of, 376-381; delicacy of, 378, 379; utility of, 379, 380; gratification of, 380.
- Smith, Lieut. of the Magpie, his gallantry and death, 173, 174.
- Solen siliqua, destruction of, by frost, 301.
- Solomon, Proverbs of, 441-448.
- Society, provision made by God for the progress of, 19-22.
- Sopwith, Mr., on the amount of silver in lead-ore, 372; description of the Alston Moor miners' peculiarities, 374, 375.
- Spencer, Dr., of Brooklyn, *A Pastor's Sketches*, 449.
- Spinal marrow, the, its structure, 146, 147.
- Spinal nerves, 149.
- Stanzas, by Mrs. Alaric Watts, 143.
- St. George, wreck of the, 175.
- St. John, James Augustus, *Philosophy at the Foot of the Cross*, 79.
- St. Paul, Footsteps of*, 78, 79.
- Stenhouse, Dr., on the use of charcoal as a disinfectant, 303.
- Stock-brokers and jobbers, 185, 186.
- Stock Exchange, 185-191; rules of the, 187, 188; transferred from "New Jonathan's" to the present building, 188; tricks of the trade, 188-190; technical terms used in, 191.
- Stuttgart, Mission Conference at, 267, 268; large printing establishment in, 360, 361; Pastoral Conference at, 361, 362; Pietist meetings in, 362; benevolent societies in, 363, 364.

- Suabian peasantry, costume of, 135, 136.
 Suabians, character of, 264-267.
 Succat (St. Patrick), 279.
 Suction, instinct of, 18, 19.
 Suffering a warning of danger, 299, 300, 446.
 Sunbeam, chemical power of the, 25-32.
 Sunshine and Shadow, 421, 422.
 Sunshine, daylight, and the rock, 292.
 Sweden, state of religion in, 157, 158.
 Swine, various species of, 152, 153.
 Syllis, its singular power of self-multiplication, 99.
 Sympathetic system, 151.
 Talbot, Mr. H. Fox, his improvements in photography, 27; experiment by, 30.
 Telescope, wonders revealed by the, 84, 85; effect produced by, in viewing the moon, 86-88.
 Testacea, number of species of, 93, note.
 Theology: A new year, 1; A wounded spirit, 441.
 Tiger-wolf, a native of Van Dieman's Land, 246; different names given to it by colonists, 247, 248; havoc committed by it on flocks of sheep, 247; its food, 248; habits of, in the Zoological Gardens, 249.
 Times of Refreshing, Chapter I., 123-131; Chapter II., 205-212; Chapter III., 375-281; Chapter IV. 344-349.
 Tortoise-shell butterfly, 259.
 Touch, sense of, 295-300.
 Tripe de roche, 177.
 Tupper, M. F. Blucher's "Forwards" 142, 143.
 Tübingen University, eminent men who have been educated in, 269; tendency of the students to scepticism, 270, 271.
 United States, census of the, 230, 231.
 Vesuvius, eruption of, 449.
 Vigilantius, his boldness in denouncing the errors of Popery, 275, 276.
 Virgin Mary, immaculate conception of, 157.
 Voeterman, Lucas, his engraving of Rubens' "Descent from the Cross," 196, 200.
 Wager, H. M. S., wreck of, on the coast of South America, 170, 171; sufferings and endurance of its crew, 171-173.
 Walpole, Horace, his character, 104, 105; at Eton and at Cambridge, 105, 106; his travels, 106; in parliament, *ib.*; at Strawberry Hill, 107; his publications, 107, 108; specimens of his epistolary style, 109-111.
 Walton, John and Jacob, their perseverance rewarded, 373.
 "Wart-hogs" of Africa, 152.
 Wasp, structure of a, 223.
 Watchman's cry, at Stuttgart, 132, 367, 368.
 Watts, Mrs. Alaric, stanzas by, 143.
 Wedgwood, Mr. the discoverer of the art of photography, 26.
 Whateley, Archbishop, *Detached Thoughts and Apophthegms of*, 231, 232.
 White, William, martyrdom of, at Norwich, 347.
 Wild boar, the, 152-156; in Great Britain, 153, 154; on the Continent, 154, 155; in the East, 155, 156.
 Wild cattle, experiment with the young of, 24.
 Wilhelms-Pflege, institution for destitute children, in Suabia, 139-141.
 Wilyama, Miss, *History of the Waldensian Church*, 159.
 Worms, number of species of, 93, note; different species of, 94-102.
 Wounded spirit, a, 441-448.
 Würtemberg, a Sunday in, 132-141; eminent men, natives of, 132; singular custom observed in reading the Lord's Prayer, 136; institutions for destitute children in, 141; a week in, 266-274, 360-368, 435-441; poets of, 274.
 Wylie, M. *Bengal as a Field of Missions*, 303.
 Year 1854, incidents in, 77, 78; the weather of, 160.
 Young Men's Christian Association, Bloomsbury branch of the, 387; lectures delivered to, 450.
 Zómer (Deut. xiv. 5), supposed by Dr. Shaw to have been the giraffe, 38.
 Zoology. See Giraffe, Wild Boar, Lion, Tiger-Wolf, Gazelle, and Arctic Fox.

CORRIGENDA.

Page 20, line 5, for "chance" read "choice."
 Page 342, line 11, for "soon" read "so on."
 Page 380, first line of the foot-note, for "nerves" read "nares."

NOV 5 - 1943

